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THIS WEEK'S NEWS

A LIMITED COMPETITION for architectural designs for a new building on the site of the Gaiety Theatre is under way. *p.* 285

KIDBROOKE, the first of the London County Council's programme of comprehensive schools, to be completed, is illustrated. There are places for 1,700 *children, a number which will eventually rise to over* 2,000. *p.* 289

THE FIRST OF THREE DIAGNOSTIC CENTRES sponsored by the Nuffield Provincial Hospitals Trust is shown on *p.* 299

THE LOW PERCENTAGE of passes in the RICS examinations is commented upon in an article on *p.* 305

VIEWS on the future for quantity surveying in Canada, expressed by Mr. C. T. Every are given on *p.* 305

BIRMINGHAM'S programme of educational building for 1955-6, *estimated to cost* £2½ *m., has been approved by the Minister of Education.* *p.* 313

CONSTITUTIONAL AMENDMENTS to the Working Rule Agreement affecting extra payments for extra skill or responsibility are given on *p.* 319

MANUFACTURERS OF BUILDING MATERIALS would be happy to be rid of the rise and fall clause if there could be stabilisation of such items as wages, coal and transport, the President of BID has said. *p.* 319

ARCHITECT'S RESPONSIBILITIES

IN a recent leading article (August 6) we drew attention to the tendency, described by Mr. E. J. Rimmer, QC, in his recent book on the law and the architect, for developments of the standard form of building contract to add heavily to the responsibilities of the architect. The successive amendments which give shape to this development are all intended to create a more equitable position for the builder and their adoption has consistently been to his advantage. Though the client does bear the brunt of fluctuations in the cost of labour and materials, the responsibilities which the builder has shed have almost invariably fallen upon the architect. The consultant admittedly receives fees for shouldering a few of these without relieving the architect of all responsibility in connection with them; the quantity surveyor demands increased payments for the acceptance of none; the legal position of the clerk of works remains unchanged. But the overburdened architect can have no complaint unless it be that he should be adequately rewarded for, and must be expensively insured against, these added duties and responsibilities; they can be devolved only by abdication from his age-honoured position.

New clauses in contracts are not, however, the sole cause of the architect's greying hairs. Mr. Rimmer suggests that the Simon Report must be considered, until disclaimed by an authoritative body, as a guide to his duties, and may be treated by the Courts as one of the tests by which his legal responsibilities are determined. Among the recommendations of the Report are two which appear to conflict with the RIBA (and most other) standard forms of contract, and both are underlined by Mr. Rimmer.

The first deals with the architect's duty to prepare a time and progress schedule before a contract is signed and to incorporate this schedule in the contract. The schedule should include (we quote from Mr. Rimmer) "the date of starting and completing every stage of the main works *and* of subcontracts and the date of handing to the contractor any necessary detailed drawings." Mr. Rimmer adds that "it is doubtful whether an architect would be safe to proceed without taking the steps indicated" unless he has the owner's express dispensation. Both recommendation and warning would appear to be unheard or unheeded by the professions and the industry. Nonetheless, implicit in them is a further warning which the cautious architect will recall when he receives from the conscientious builder a progress schedule for approval. The approval will be withheld or, at the best, qualified, lest by giving it the architect assumes the responsibilities of the builder for the organisation of the work.

The substance of the second recommendation, which deals with regular site meetings, will reinforce the architect's reluctance to approve the schedule. Mr. Rimmer states that "if by [the architect's] failure to hold such meetings, or otherwise to bring his influence to facilitate progress, the building owner suffers loss which he cannot recover from the contractor, he may turn to the architect for redress." Our cautious architect may take some comfort that the RIBA Forms give him authority only to postpone work, but this may be small consolation when, before a Justice, an official referee

or an arbitrator, he hears his professional colleagues describe how they invariably convene monthly, fortnightly, even weekly meetings where, from the chair, they organise the site work and issue detailed instructions to the builder. The practice is established and largely accepted in spite of the lack of its recognition in all forms of contract and in spite of two documents of some authority which post-date the Simon Report.

The Working Party Report lays the responsibility for both the time and progress schedule and for site organisation squarely with the builder, though it recommends that the architect should convene an initial meeting to "launch the contract." The RIBA's pamphlet "The Architect and his Work" stresses so many of the architect's duties that some consider it too dangerous to pass on to a client, and it approves the architect's convening an early meeting "to establish contacts." Time and progress schedules, it allows, should be prepared by the builder "in collaboration with the architect and consultants," but site meetings are "arranged by the builder and attended by all sub-contractors and their foremen. The architect will be present at these meetings, but he will regard them as the responsibility of the builder, and will be careful not to interfere with the management of the job."

The architect will remember with relief that even such a magnificence as Churchill did not himself take over the duties of each and every admiral in whom confidence was lost. In order to retain his command of the works the architect need not and should not assume a single one of the builder's duties or responsibilities as laid down by the forms of contract and the two publications last mentioned. Indeed, were it not for the fact that the Working Party Report was published over a year before "The Law Relating to the Architect" it might be thought to have provided the authoritative disclaimer that Mr. Rimmer sought.

Are we asking too much of the architect? Or are architects assuming too much for themselves? It must be remembered that, as the Working Party Report and the RIBA pamphlet both stress, it is the architect's duty to supply the builder before work begins at the site with all the information necessary properly to organise the works. If this is done, and the peculiar circumstances of war and after-war which have dictated other courses have now passed, then there should be no need, unless it be the architect's own inefficiency, for him to assume any responsibility for site organisation.

NOTES & NEWS

NEW IDEAS IN FLAT DESIGN

THE design of working-class flats long followed rather stereotyped lines, but since the war a good deal of original thought has been brought to bear on the subject. For example, we have seen in one case the abandonment of balcony access in favour of internal corridor access; and also high "point" blocks, affording a maximum amount of light and air, are being increasingly built. The LCC, who have done excellent pioneer work in this field, are now building flats with external staircases of reinforced concrete. The area within the four walls can thus be more economically planned as living space, while the attached staircases make attractive elevational features. This type of design, too, is presumably less costly than where staircases are integrally designed.

NEW SECONDARY SCHOOLS

THE Ministry of Education have now issued a second edition of Building Bulletin No. 2A, New Secondary Schools (HMSO, price 3s. 6d.) which has been revised to take into account the changes in standards of cost and design that have been made since the first edition was published in October, 1951.

The Standards for School Premises Regulations, 1954, prescribe reduced minimum areas of teaching accommodation for the one- and two-form entry size of school. These reductions involve consequential changes in the formula for calculating limits of cost; this formula has also been modified by the new arrangements for adjusting the standard limit of £240 a place in step with changes in the costs of labour and materials. It is these changes that have been incorporated in the revised Bulletin.

At the same time the opportunity has been taken to amend or restate several of the suggestions and recommendations made in the first edition, and to add an entirely new section dealing with the building of secondary schools by instalments. It is pointed out, however, that the second edition, like the first, is intended to be read, in conjunction with the current Building Regulations, as a supplement to Building Bulletin No. 2, and not as a comprehensive body of guidance on the design of new secondary schools.

GERMAN SCULPTURE

THE OPENING of the exhibition of sculpture, drawings and woodcuts by Gerhard Marcks at the Arts Council Gallery, was a noteworthy occasion, writes Basil Marriott. It is, I think, both his first venture here, and the first one-man show to be sponsored abroad by the German Federal Republic since the war. Moreover, it fortunately coincides with the paving of the garden behind the Arts Council's elegant house at 4, St. James's-square, to provide additional space for the display of sculpture, and this is a happy choice.

Comparison with the work of Lehmbruck and of Barlach—noted here in connection with the Holland Park exhibition—suggests that Herr Marcks is to be regarded as a happy medium between those two rather uneasy extremes in the development of German sculpture. Though some of his larger figures are impressive in their outdoor setting, notably "Eve" and "Gisela," and have architectural possibilities, one on the whole preferred his smaller pieces, particularly animals such as the "Spanish Bull" and "Kneeling Cow" where the suggestions of mass by flattish, angular planes was most appropriate. Some of his human figures are, to me, marred by an almost caricature treatment of the face which detracts and distracts from an otherwise lyrical gravity and repose. The drawings have a crisp, sensitive and flowing line, while the woodcuts are by contrast more stylised and "patterned," as appropriate to the medium.

The exhibition provided a welcome glimpse of what is going on in a country still too cut off from us artistically, and interesting as the work of an eminently humanistic artist who has maintained the regard of a younger generation throughout Germany's self-imposed upheavals.

It remains open until September 4.

QUEEN TO OPEN SCHOOL

THE FIRST SECTION of the new Wigan College of Further Education is to be opened on October 21 by the Queen, who will be accompanied by the Duke of Edinburgh. The College, like the Thomas Linacre Secondary Technical School, which it adjoins, has been designed by Mr. Howard V. Lobb, CBE, FRIBA, in association with Mr. George Grenfell Baines, ARIBA.

HEATING METHODS IN USA

THE Institution of Heating and Ventilating Engineers have arranged to hold a special meeting on September 14, when Mr. John K. M. Pryke, BSc(Eng), MIHVE, AMICE, consulting engineer, of New York, will present a paper entitled "Current American Practice in Heating, Ventilating and Air Conditioning." The meeting will be held in the lecture hall of the Institution of Mechanical Engineers, 1, Birdcage Walk, Westminster, at 6 p.m.

WORK FOR PRIVATE ARCHITECTS

SALOP COUNTY COUNCIL has decided to appoint private architects to design and supervise the construction of five schools in association with the County Architect, Mr. C. H. Simmons, ARIBA, Dip.TP. The architects and the projects concerned are: Messrs. Richard Sheppard and Partners, Oswestry Boys' Secondary Modern School; Messrs. Yorke, Rosenberg and Mardall, Pool Hill, Dawley Secondary Modern School; Messrs. Basil Spence and Partners, Weston Rhyn Secondary Modern School; Messrs. Lyons, Israel and Ellis, Bridgnorth Secondary Modern School; Messrs. Lavender, Twentyman and Percy, Pontesbury Secondary Modern School.

COMING EVENT

SATURDAY, AUGUST 28

TOWN PLANNING INSTITUTE.—Town and Country Planning Summer School. St. Andrew's University, Scotland. Continuing until September 4.

TUC BUILDING, BLOOMSBURY

THE foundation stone of the TUC Building, Bloomsbury, is to be laid by Mr. Jack Tanner, Chairman of the TUC, on August 27. The building, designed by Mr. David du R. Aberdeen, FRIBA, is expected to be completed in the spring of 1956.

DR. F. C. EELES

WE regret to announce the death, on Tuesday, of Dr. F. C. Eeles, OBE, DLitt, LL.D, Secretary of the Central Council for the Care of Churches, which occurred the day before he was due to retire from office. A notice of Dr. Eeles' career will appear in our next issue.

PROFESSIONAL ANNOUNCEMENTS

MESSRS. LOUIS DE SOISSONS, RA, AND PARTNERS, announce that as from August 16, the name of the Plymouth practice will be changed to LOUIS DE SOISSONS, PEACOCK, HODGES, ROBERTSON AND FRASER.

THE ARCHITECTS' CO-PARTNERSHIP of 44, Charlotte-street, London, W1, has opened a branch office in Nigeria, at 1, Regis Aine-street, c/o PO Box 870, Lagos. MR. W. J. G. GODWIN, ARIBA, AADipl (Hons), has become the resident partner since March last. Mr. Godwin and his wife—JILL HOPWOOD, ARIBA, AADipl—would be pleased to receive trade catalogues.

MR. L. BROWN, ARICS, AIQS, chartered quantity surveyor, will be removing on September 20, from Hartshill, Stoke-on-Trent, to Marsh Chambers, Marsh Parade, Newcastle-under-Lyme (tel. Newcastle 65293—unchanged).

"THE BUILDER" CARTOON

"Acanthus" is on holiday.

FROM "THE BUILDER" OF 1854

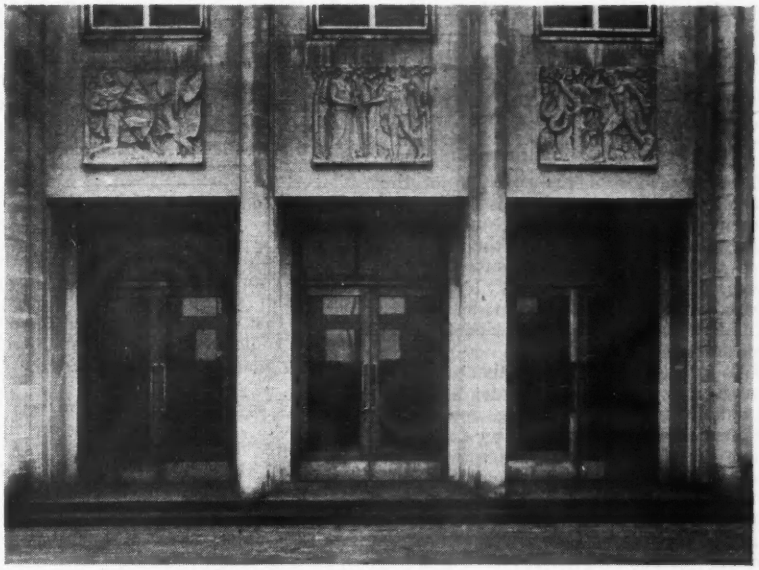
Saturday, August 19, 1854

A WILLOW DOCK.—Such a dock is now being built at La Crosse, Michigan. It is constructed entirely of willow twigs, about 12 ft. long, bound in bundles 1 ft. thick, which are so ingeniously arranged and woven together that it is impossible for sand to work out or the water to work in. Each bundle contains about 100 small trees, and it will take 50,000 of these bundles to complete the work. It is said that the willows will sprout and grow, rooting firmly together, thereby forming a living superstructure which will last for ages without the least tendency to decay. Docks like these occur very frequently on the banks of the Rhine in Germany.

COMPETITION NEWS

Gaiety Theatre Site

THE English Electric Co., Ltd., 28, Kingsway, WC2, are to develop the site of the Gaiety Theatre at the corner of the Strand and Aldwych, London, as office accommodation. A limited competition for plans is being held—with Sir Percy Thomas, OBE, PP.RIBA, and Mr. John Murray Easton, FRIBA, as architectural assessors—and nine firms of architects have been invited to take part, as follows: Mr. David du R. Aberdeen, FRIBA, AMTPI; Messrs. Adams, Holden and Pearson, FF.RIBA; Messrs. Farmer and Dark, FF.RIBA; Messrs. Farquharson and McMorran, FF.RIBA; Mr. Michael Rosenauer, FRIBA; Messrs. Louis de Soissons, RA, and Partners; Messrs. Basil Spence and Partners, OBE, FRIBA; Sir John Burnet, Tait and Partners; Messrs. Yorke, Rosenberg and Mardall, FF.RIBA. It is understood that designs must be submitted by early 1955.



Panels depicting the Labours of Hercules over main entrance.

Sculpture on Medical Research Laboratories, Porton

Sculptor
HERBERT W. PALLISER, FRBS

Architect
A. S. REID, ARIBA (MOW)

THERE is once more a slight but noticeable trend in the direction of using sculpture as an integral part of architecture, and the examples shown on this page are recent. They were commissioned by Sir Charles Mole, KBE, MVO (Director-General of the Ministry of Works), for the Medical Research Laboratories, Porton, near Salisbury—a building for which Mr. A. S. Reid, ARIBA, was responsible to the Ministry of Works. Seven of the Labours of Hercules in all were depicted, four being over individual doorways, and the other three (illustrated) over the main entrance, the subjects being suggested to the sculptor by the architects as having a bearing on the nature of the work of the Laboratories. The panels (each 4 ft. 6 in. by 3 ft. 10 in.) were carved by Mr. Palliser in Portland stone in his studio and were built in as the work proceeded.

Hercules and Stymphalian Birds.

The Golden Apples of the Hesperides.

Hercules and the Hydra.

CORRESPONDENCE

THE RISE AND FALL CLAUSE

To the Editor of *The Builder*

SIR,—I have read with interest your article, "Rise and Fall Clause" in your last issue. It is obvious that those in favour of the abolition of the clause consider rises in cost either of labour or materials to be much more likely than falls; that being the case, how can the abolition of the clause be considered fair or reasonable? I am surprised that The Federation of Master Builders consider the time ripe for dispensing with the condition.

Your article further states that a proviso must be applied that the order for work should be placed within, say, one month from the date of tender. Why a month? It is quite usual for a builder to be expected to take off quantities and price the work in a fortnight; sometimes in fact, only a week is given. Surely if the work of tendering is to be done in that time, it should not take a building owner a month to say yes or no.

You say there is a rapidly increasing tendency amongst building owners to ask for firm prices; is this a sporting gesture to deny themselves a possible rebate owing to falling costs? Personally, I should be only too pleased to see a change in conditions which would render the clause unnecessary, and agree with your leading article that a general conference might be of use.

A. OSMAN [MIOB]

Oxshott, Surrey.

To the Editor of *The Builder*

SIR,—We have been very interested in reading the various opinions expressed as to the desirability or otherwise of abolishing this Clause. In your leading article last week, you stated: "Given really determined resistance by the contractors as consumers, the merchants and manufacturers would soon have to meet the demand for firm prices."

We fear you have overlooked the position in the building trade, whereby contractors are at the mercy of various "rings," bricks, cement, plasters, drain goods, cast goods, steel windows and roofing, to name only a few. What hopes have contractors to obtain firm prices, let alone competitive ones, by offering resistance?

Where are the alternative suppliers, or must we all stop business for six months and refuse to buy any of these materials in an attempt to bring about the course desired? Do let us be practical!

REALIST.

To the Editor of *The Builder*

SIR,—Further to my recent letter, published in your issue of August 6, I note your reference to this in your editorial of your last issue, in which you observe that we have overlooked the point that we could have brought an action for damages against the supplier in the case quoted.

May I say that this question was not overlooked. In point of fact, it was made abundantly clear to the suppliers of the goods that this position may well arise—in fact, it is still open to us to pursue this course at the completion of the contract when the extent of the increased costs to which we have been put and any damages resulting therefrom have been determined. Surely, however, the point is that contractors are not desirious of indulging in the risky business of litigation, and being in a favourable position to bring an action for damages is no substitute for honest contractual conscience of the supplier.

As you rightly point out, we are all servants of the public, and our job is to carry out our building exercises expeditiously and economically, yet so long as the contractor's alternative is to resort to litigation to compel suppliers to honour their bargains, he will continue to take the simpler course of protecting himself by retaining the variation clause. Let the manufacturers and their suppliers cease their weekly circulation of increase of price notices and let them quote fixed prices for agreed periods or duration of particular contracts, and we will do the rest.

CONTRACTOR.

To the Editor of *The Builder*

SIR,—The letter from "Contractor" in *The Builder* of August 6, raises an issue which is entirely outside the general consideration of the merits or otherwise of abolishing the variation of price clause.

It is difficult to imagine any firm in the normal way of business being prepared to undertake a contract on the basis of risking the imposition of purchase tax by the Government. This tax is automatically recoverable by passing on the cost to the consumer under section 4 of the Finance Act, 1948, and an order by the Government rescinding such a tax would also operate automatically from the date of such an order.

"SPECIALIST CONTRACTOR."

GCE EXAMINATION AND BUILDING

To the Editor of *The Builder*

SIR,—I have read with interest your Leader of July 16 on the GCE examinations, and Mr. Sleeman's remarks in your issue of July 30, with all of which I fully concur. In your leader you refer to the boy of 18 holding GCE with passes at "A" level, who would demand some recognition for this achievement as far as the National Certificate is concerned.

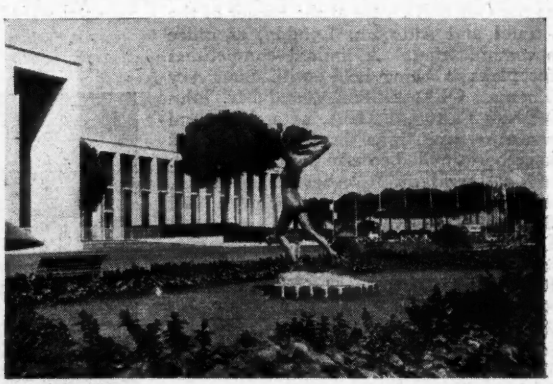
I would, however, like to draw your attention to a GCE problem that is with us now, without waiting for the 1955 examinations. I refer to the growing number of boys from 16-18 holding a GCE in five or more subjects at ordinary level who are making a career of building. These, too, feel that some reward is due to them for their efforts; possibly in the shape of exemption from ordinary National Certificate subjects—as indeed do their parents who have kept them at school, often at some expense, to achieve this. A secondary grammar boy with passes in, say, Mathematics, Physics and Chemistry can usually tackle all first year "national" subjects with ease except building construction. Entry direct into second year of the ONC course, however, appears to be by no means automatic. This may be due to the difficulty of taking Building Construction I and II together, or because of the Ministry of Education's requirements regarding student hours. I leave it to those more capable than I to give reasons for this.

I would, however, submit that the secondary grammar boy should have proper provision made for his further education on entry into our industry.

R. L. FULLERTON [AMIStructE].

43, Enmore-gardens, SW14.

(*Correspondence continued on page* 303.)



THE UNIVERSAL EXHIBITION AREA, OUTER ROME. Some of the permanent buildings used by Ministries are shown on the left. The other picture shows a general view of the central area. (*See article on facing page.*)

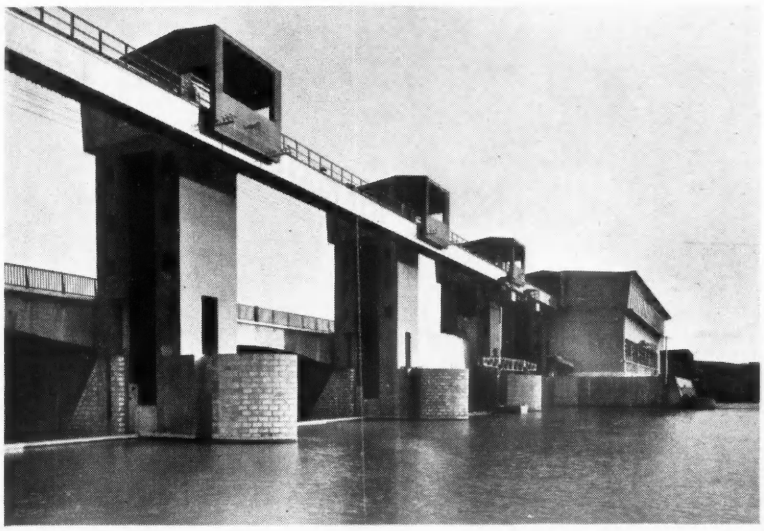
Construction in Post-War Italy

3—OUTSIDE THE WALLS OF ROME

By S. Gordon Joseph

IT is claimed that Rome is no longer a city, but rather a collection of cities. Certainly a constellation has sprung up around the periphery. New towns like the Aniene Garden City and smaller-scale estates like the Tiburtino and the Tuscolano, which lie off the long straight roads out of town ; towns with a specialist function like Film City, the Cinecitta studios forming Italy's own Hollywood ; ornamental showpiece cities like the Esposizione Universale di Roma (or Universal Exhibition District) which is not simply an exhibition site but a thousand acre township : these are all part of the 20th-century movement of Rome to break out of its ancient urban limits into the empty spaces of the surrounding country.

By the time of Augustus Caesar, at the zenith of her empire nearly two thousand years ago, Rome had attained dimensions which we have come to associate exclusively with the industrial-commercial cities of to-day. The walls then enclosed a population of over a million, living mainly in multi-storeyed tenements in teeming streets. After the decline and fall in the 5th century AD, the city maintained an insignificant provincial existence, and a thousand years later scarcely 20,000 people inhabited that same area—then a desert of ruined monuments, with streets gone to grass. But the tide turned under the Renaissance Popes, and Rome steadily approached its former size. In the present century, for the first time, the city has jumped beyond the line of its Imperial walls into the surrounding region of Lazio—the ancient Latium.



TIBER VALLEY SCHEME : The Castelgiubileo power station and (below) the dynamo house. Architect : Gaetano Minnucci.

INEVITABLE DEVELOPMENT

In one sense this is inevitable. If Rome were to develop within, there would have to be an encroachment on ancient sites and monuments. Already inside the city, construction essentially internal such as certain public buildings, transport terminals and communications must all wage a constant battle with Ancient Rome which tests to the extreme the modern planners' aptitude for successful compromise. In the other sense, to service the increasing needs of a growing city, external resources have to be exploited, and that means important construction work outside the city. One of the major projects in this respect was completed with the opening of the Castelgiubileo power station, as part of the Tiber Valley Scheme.

That scheme began to take shape as early as 1941 when the Terni Company and the Societa Imprese Centro Italia set up a hydro-electric power development board. But hardly any civil construction work went ahead during the war, and it was not until the post-war years that a dam was thrown across the waters of the Tiber at Castelgiubileo, to raise the level by half again, and the power-house structure which forms the right bank end of the dam was built. A road bridge 620 yds. long and 12 yds. wide has been incorporated in the dam to maintain former routeways and, in fact, replaces a bridge destroyed in the war. The station lies about seven miles north of Rome and marks the first stage of the scheme, which involves other rivers and their associated lakes to produce 1,000 million kWh per annum plus an equal reserve amount.

LOW-COST HOUSING

On another side of Rome, an important project of a different nature is taking place : the housing of working-class families in low-cost modern style houses. Rome, unlike Naples, was not subjected to significant bombardment and thus lost no houses through war. But her housing need is no less urgent, due to the expansion of the population within the city and from immigration. For Rome acts like a magnet to its surrounding regions, and has done so ever since it was made the capital of a newly united Italy in 1870.

Accordingly, under INA Casa Administration (mentioned in the previous article) estates are being developed a few kilometres from the city centre. They are mostly in the form of multi-storeyed blocks of flats of varied design (a dozen or so leading Italian architects have been given a relatively free hand for individual expression within the limits of the general plan) and set amid adequate green surrounds. One of these is the Tiburtino Estate some four miles east of the city. It is a residential quarter for 4,500 with shops, public buildings and social centre, but no school nor market were envisaged in the plan since these are already con-

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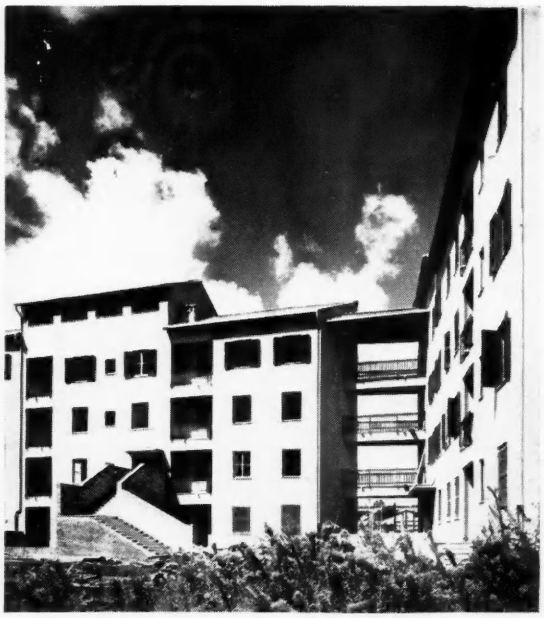

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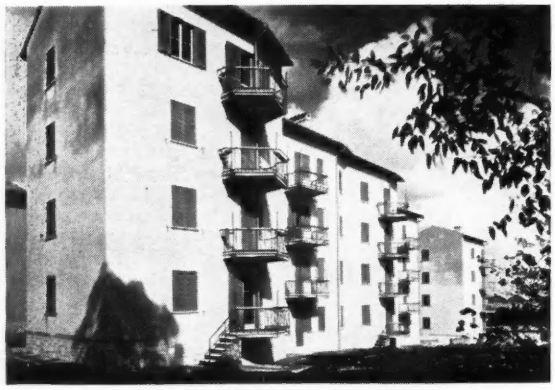

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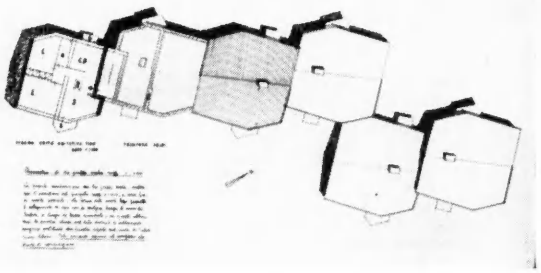
THE TIBURTINO ESTATE, ROME. Shown here are (1) *: A terrace of houses (Ridolfi, architect) ;* (2) *: a block of flats (Lugli, architect) ;* (3 *and* 4) *: a scheme of flats and their layout (Federico Gorio, architect-engineer).*



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tained in a project in the immediate vicinity.

The estate plan was divided into lots, for each of which a different architect or group is responsible. Section "A," for example, was designed by Federico Gorio who has had much experience of this aspect of post-war Italian building (he worked on the Martella project described last week). The terrain here slopes north-south, and his solution is an arrangement of adjoining blocks of apartments in pairs, the one raised half a storey above its partner. The two share a common staircase, each of whose flights gives access to a single apartment.

THE UNIVERSAL EXHIBITION

Away on the other side of the city stands the "New Rome," the district known as the Universal Exhibition Area. It was conceived during the pre-war era, originally in gargantuan terms appropriate to a totalitarian regime. It has been whittled down somewhat in scope, but even now its character is monumental.

Mussolini had the idea of making EUR, as it is sometimes called, into a city the size of Florence! Whether Rome could have coped with such a big baby on its doorstep we shall never know, for the final plans envisaged a town of about 1,000 acres maximum extent. The major buildings were erected before the war—enormous public buildings, museums and institutes making up half of the project. The centre of the district is an expansive square whose perimeter amounts to about one-half of a mile. This is connected to Rome by the Via Cristoforo Colombo, a great thoroughfare averaging 100 yds. across; and before the war an underground railway was almost completed to link with Rome's Termini station.

EUR never had a chance to function properly, for soon the war broke out, and when it came to an end for Italy, it was regarded with distaste as a relic of the Fascist era. Essentially an exhibition area, however, it was difficult to see what it *could* then be employed as. Its larger buildings might be used as municipal and governmental offices, but this would place them in a sort of exile from the capital and would entail excessive travelling back and forth between Rome and EUR. The underground tube, too, has proved somewhat abortive, for it does not follow the logical lines of communication.

In fact, the post-war years have seen it function as a residential district as much as an Exhibition site. Its houses are built according to strict planning standards with regard to height and spacing, and trees and gardens form a vital part of the district. Just outside the district, a working-class estate is situated. It is possible, thus, that the settlement of Rome's surplus population hereabouts will gradually bring the massive buildings, the wide avenues, the underground, etc., into natural operation, and perhaps even encourage the expansion of Rome outside the city walls.

(*to be concluded*)

View from biology greenhouse showing north-west wing, centre block and part of south block.

KIDBROOKE COMPREHENSIVE SCHOOL FOR LONDON COUNTY COUNCIL

Architects
SLATER, UREN & PIKE, FF/ARIBA

Partner-in-Charge
CHARLES PIKE, ARIBA

Chief Assistant Architect
H. C. WILSON, ARIBA

Consulting Structural Engineers
OVE ARUP & PARTNERS

Mechanical, Heating & Electrical Consultants
EDWARD A. PEARCE & PARTNERS

Quantity Surveyors
SELBY & SANDERS

Main Contractors
GEE, WALKER & SLATER, LTD.

Foundation Contractors
J. GARRETT & SONS, LTD.

THE first scheme devised for this school was completed at a time when the country was facing considerable financial difficulties and in common with other Government Departments the Ministry of Education introduced economy measures. These took the form of new standards for school premises which sought to obtain accommodation of previous dimensions with a drastic reduction of cost. This could only be achieved by a new planning approach, the elimination of non-essential circulation space, dual use of some rooms and economy in services.

The second scheme, based on the new Ministry requirements, was entirely new and is virtually the same as that now erected, except for a drama hall for 500, which disappeared at tender stage to effect further economies.

General characteristics of the design are: (1) Maintenance of scale appropriate to children. (2) Elimination of lifts and limitation of building height to mainly three storeys. (3) Provision of grass and garden areas next to teaching rooms. (4) Segregation of noisy elements.

(5) Reduction of apparent size of the buildings by designing so that it is not possible to see the whole scheme from any one aspect. (6) Expression of the various plan elements to give co-ordinated variety of elevational treatment and to avoid undue lengths of massive building.

(7) Creation of a friendly atmosphere for small human beings with the studied use of colour and contrasting materials. Colour is also used as a dominant theme to denote entrances and floor levels and, in time, this will be apparent to the children.

General view from west.

Planning aspects of the scheme.—(*a*) Sub-division of the various teaching rooms, such as science, domestic science, general classrooms and art rooms into three main wings linked together by common elements such as the library, main staff rooms, advanced needlework and cookery classrooms. These three main sections can be used independently or collectively floor by floor, providing flexible teaching accommodation to be used according to the educationists' needs and requirements.

(*b*) Planning of 12 large classrooms in groups of four on three floor levels with dual-purpose use as dining-room. Each group has folding door screens which open into each other to provide one spacious dining area adjacent to serveries. The serveries have a roller shutter which remains down during teaching periods and isolates the kitchen section from the school.

(*c*) Reduction of circulation space (corridors) and height of classrooms for economic reasons without affecting adequate access or decreasing lighting standards. Large classrooms above ground floor are lighted from more than one side.

Circulation area is 19 per cent. of the total area which compares with 25 per cent. and even 30 per cent. of older planning methods. There is continuous corridor circulation at ground-floor level, but above short lengths of corridor are provided with the larger classrooms used as linking units.

Special features of design.—In the main hall space has been provided for the whole school (standing) to attend morning prayers. There is seating for nearly 1,500. The design of the hall is influenced strongly by the acoustic needs of speech and music. For theatrical performances a frame can be fitted in the ceiling of the stage and let down to form a proscenium opening with curtain screens. A removable "fit-up" and concealed electrical dimming apparatus can be brought into use to provide the necessary requirements for a full theatrical performance.

The door screen between the hall and the entrance foyer can be opened up to the full width to give additional seating space in the foyer, if needed. The apparent size of the hall is reduced by side galleries which are lower in height and can be used in a variety of ways.

Domestic science rooms contain equipment such as ordinary sinks, stainless sinks, electric, gas and solid fuel cookers, refrigerators, clothes boilers, washing machines and drying cabinets, which cover almost all the variations of domestic apparatus which the girls are likely to meet when they have homes of their own. Attached to some of the domestic science teaching rooms are flats which contain varied combinations of kitchens, bathrooms, bedrooms, bed-sitting-rooms and living-rooms fully furnished and equipped. Floor materials are also varied and the girls are taught how to look after and maintain such varied finishes.

The art rooms have a simple shell concrete roof providing a curved ceiling with a high-level north light on one side and small windows on the south. The walls are left with large areas of pin-up space. The art rooms are designed in pairs with folding doors which can open to form one large gallery when required for exhibitions. The painting room which adjoins the roof terrace is elliptical in shape for no special reason other than variety and the creation of an informal atmosphere.

The headmistress's study and also that of the assistant headmistress and the secretarial staff are situated in the main foyer at first-floor level. Loudspeakers are fitted in each classroom and as well as for radio broadcasts, class changes and fire alarms they can be used by the headmistress to address each class from her study. Certain of the loudspeakers are fitted with a "speak back" device for use of the staff.

A greenhouse is provided for biological experiment in connection with science teaching. Science rooms contain equipment for advanced work in physics, chemistry and biology, as well as general science. Lecture rooms with stepped seating, while primarily arranged for science demonstrations, are easily accessible from corridors for other subjects.

The garden lay-out contains lawns and areas of (labelled) shrubs and trees with numerous garden seats. The playgrounds are extensive, but the large area will be broken in length by planting.

Construction and external materials.—The school generally has a reinforced concrete frame and the cladding consists of a warm yellow-brown Leicestershire brick with panel filling of Canadian shingles which will weather to a silver grey. Coloured tiling and painted steel windows provide emphasis.

The main hall has a 3-in. shell concrete roof covered with copper, and it is supported by a single concrete pier at each corner. The side beams are pierced with a large window fitted with a mechanical venetian blind. Side galleries have an uninterrupted view of the hall, and this is made possible by a slender beam hung by thin concrete hangers to the main concrete side wall above the window.

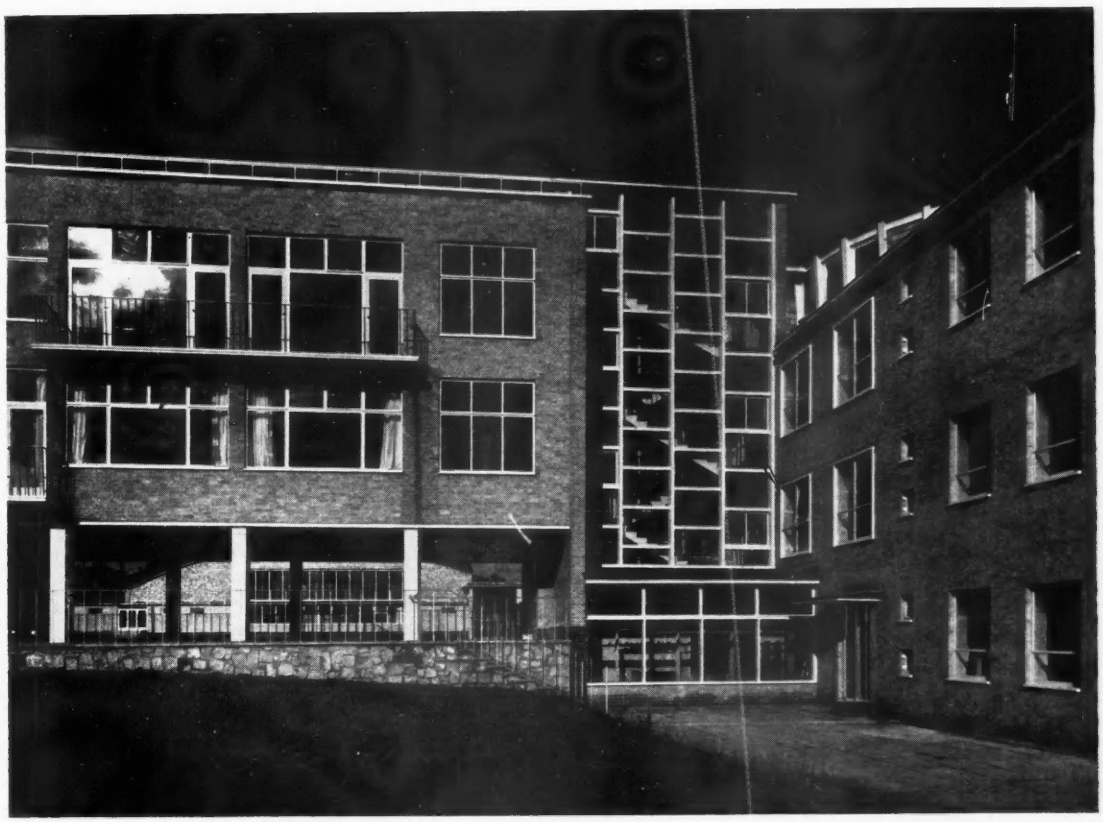
The internal finishes are as follows: General classrooms, Accotile. Housecraft, greaseproof Accotile and buff quarry tiles. Corridors, linoleum laid in tile form to patterns. Walls and ceiling, plaster and emulsion paint in varied colours. Science room fittings, West African iroko hardwood, and floors of afrimosia block. Gymnasia floors, Gurjon African hardwood.

Hall floor, Japanese maple. Side panelling to galleries and stage front, beech and iroko. Ceiling, fibrous plaster. Side panelling at high level and at rear of hall is in hardboard on battens and counter-battens. Where necessary, absorbent rock wool is used with perforation in the hardboard. The stage panelling is in birch plywood on battens and stained to a silver grey. Glazing to gymnasia and parts of staircase windows is in armoured plate glass to avoid any possible danger. As an internal finish to shell concrete roof of the main kitchen and the art rooms Pyrok sprayed plastic finish is used to reduce noise and condensation. This material is also used in the main foyer and the housecraft rooms.

Mechanical services.—Services provided are space heating, domestic hot and cold water, gas, ventilation plant and fire services. Space heating in the school is effected by means of radiators, pipe coils and warm air circulators. The temperature of the water serving the heating system is controlled by a mixing valve in the boiler house, the four one-piece fabricated steel boilers being operated at a constant temperature and having a total heat output of 8,800,000 B.Th.U. per hour.

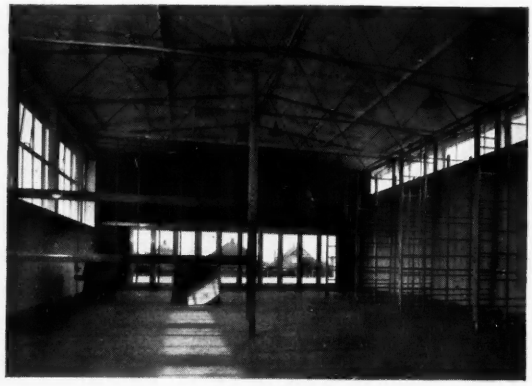
Low-pressure air semi-automatic oil firing equipment is installed and the burners are at present operating on medium fuel oil. The plant is designed, however, to enable either coal tar fuel or heavy oil to be substituted. Three similar circulating pumps are provided, any two of which may be run to circulate the required quantity of water.

Generally speaking, the classrooms are heated by means of a continuous length of steel wall type radiator, located beneath windows. Pipe coils are installed beneath lockers in corridors, beneath cloak fittings and in stores. In

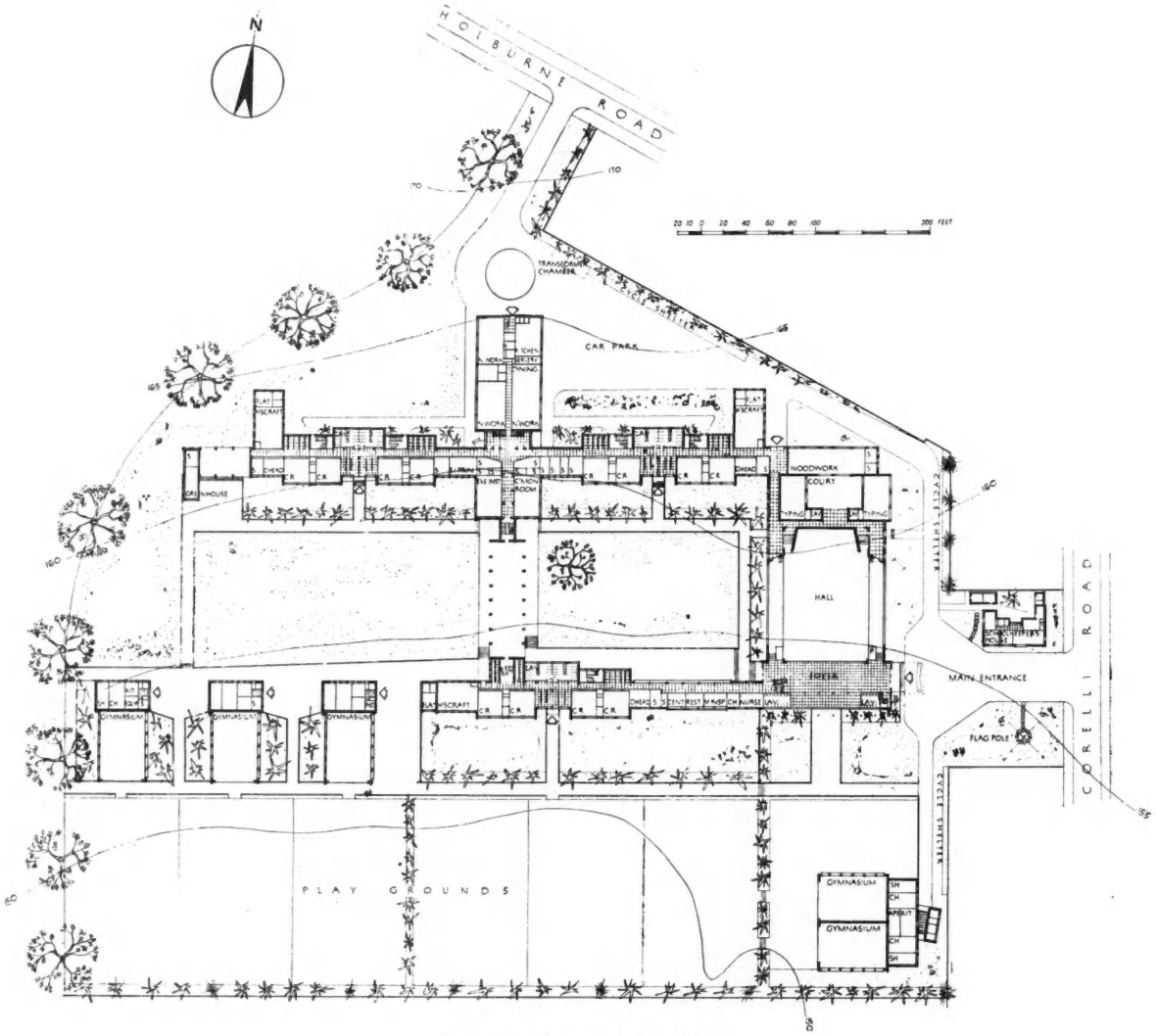


Junction of centre block and south block from the west.

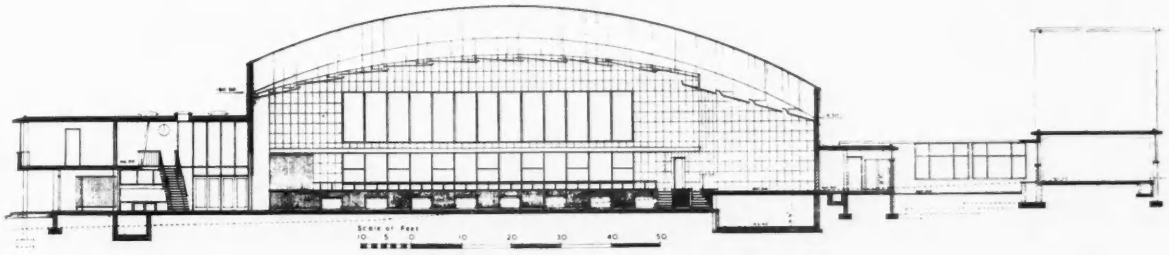
The kitchen.



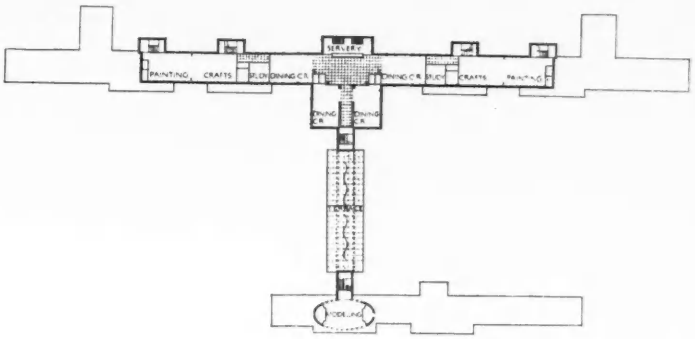
Interior of a gymnasium.



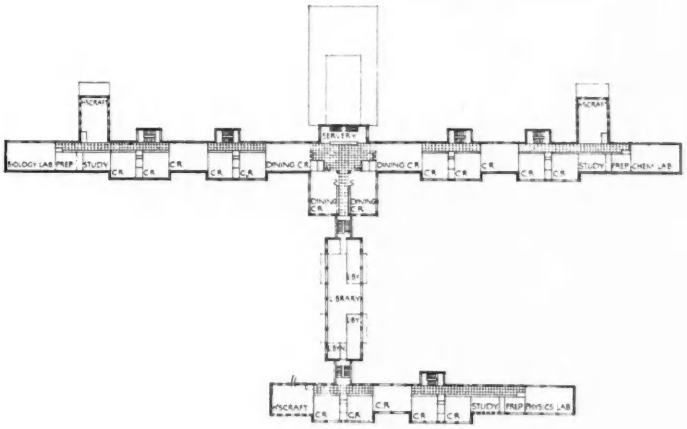
Layout and ground-floor plan.



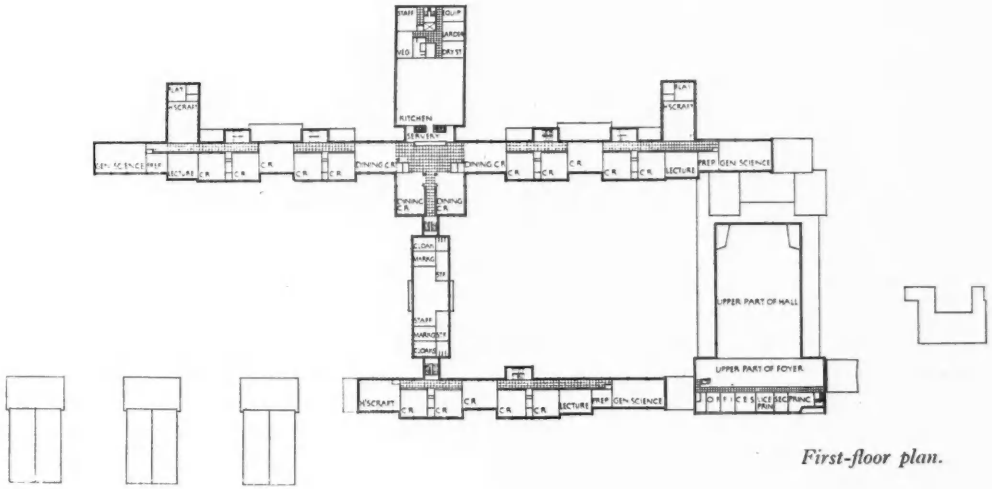
Longitudinal section through assembly hall.



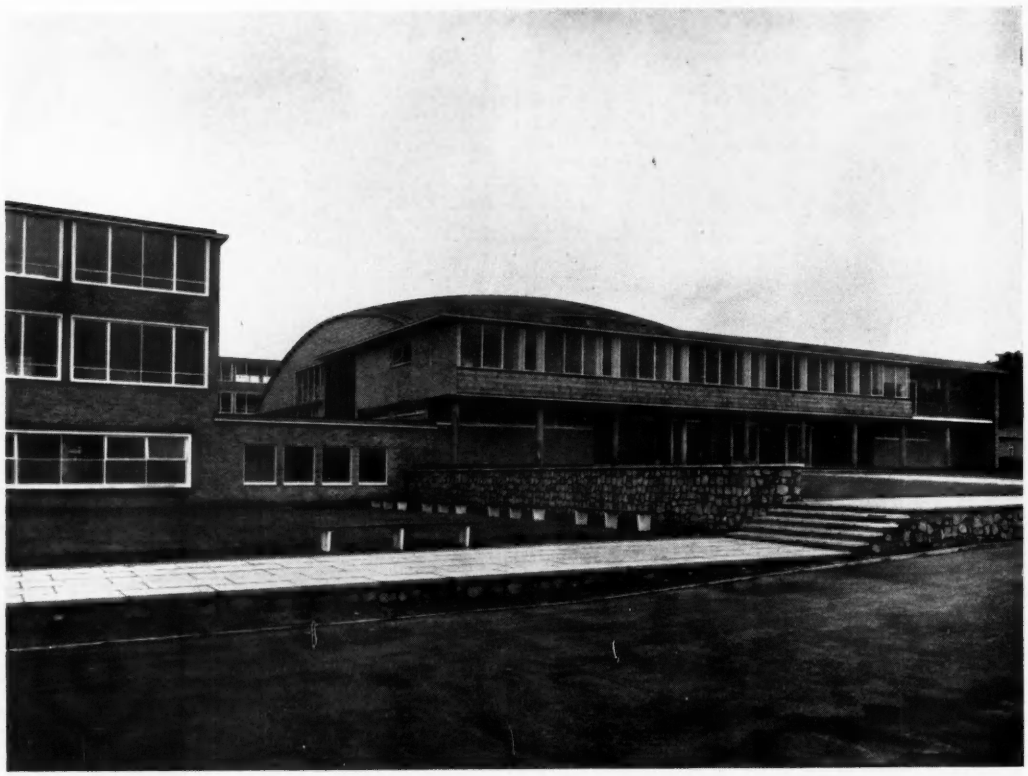
Third-floor plan.



Second-floor plan.



First-floor plan.



Assembly hall and administrative offices from south.

practical rooms, where all the wall space is occupied with fitted furniture and other equipment, warm air circulators have been erected in adjacent stores and connections to the grilles made through the partition wall. These units are of the recirculating pattern with the exception of the chemistry laboratories where fresh air is taken from outside and the vitiated air extracted by means of propeller fans at the opposite end of the room. The library is heated by means of radiant steel panels located on the face of the columns and on the soffits of the ceiling beams.

The assembly hall background heating by radiators is supplemented by two plenum plants, one under each gallery, delivering a total of 22,000 cu. ft. of fresh warmed air per minute from behind the radiators. The extract is by propeller fans extracting from the roof void. During the period that the hall is unoccupied and only the radiators are in operation, a thermostat controlling a motorised valve maintains a background temperature. The same valve is controlled by a further thermostat set at a higher temperature when the hall is in use, the control which switches the plenum plant "on" automatically changing from one to another. Following is a list of the principal sub-contractors engaged on the scheme :

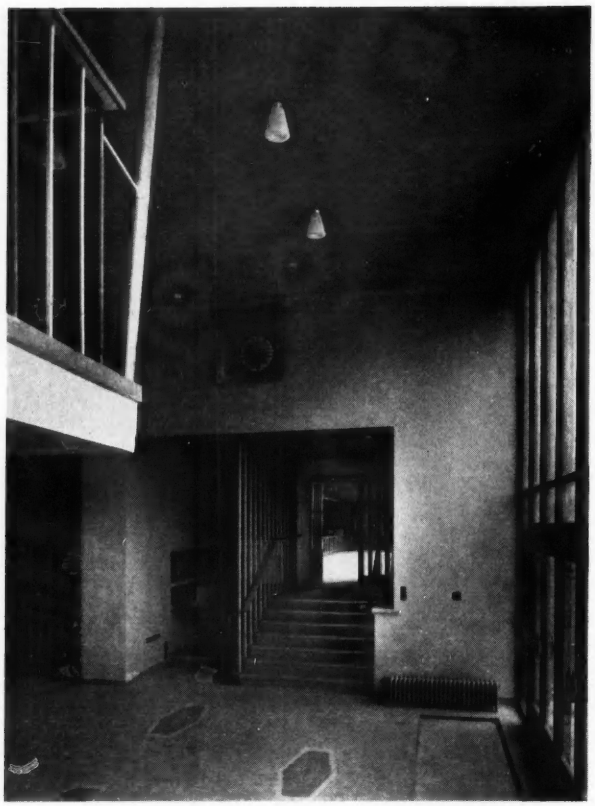
Holliday Hall and Stinson, electrical installation ; Ellis (Kensington), Ltd., heating and ventilation ; Dent and Hellyer Sanitation, Ltd., plumbing ; Venesta, Ltd., w.c. partitions ; Mountford Bros., Ltd., cloakroom fittings; Grassphalte, Ltd., external planting, turf, etc. ; Armstrong Cork Co., plastic and cork flooring ; Morris Singer and Co., shower screens, special door handles, hood over main entrance ; Alfred G. Roberts, Ltd., door furniture ; William Mallinson and Sons, lecture room seating ; E. J. Elgood, Ltd., linoleum flooring ; Philip Flooring Co., Ltd., wood block flooring ; Bruce Britow (Engineers), Ltd., extract fan grilles ; Comyn Ching, Ltd., kit lockers, mobile cloak stands, library panel heating.

Tidmarsh and Sons, venetian blinds ; Faulkner Greene and Co., Ltd., glazing ; Clark and Fenn, Ltd., fibrous plaster; E. Hill Aldam and Co., Ltd., sliding folding door mechanism ; C. and T. Pyrok Contractors, Ltd., sprayed ceilings ; Jones and Broadbent, Ltd., plenum chamber insulation ; Sound Diffusion, Ltd., sound system ; Hall and Dixon, Ltd., stage equipment ; Haine and Corry, Ltd., sound proofing ; Hoisting Appliance Co., lifts ; Quickset Water Sealers, waterproofing to boiler house ; Howard Bros., Ltd., aluminium roller shutter ; Builders Iron and Zincworks, greenhouse, aluminium and copper roofing.

Stitsons Sanitary Fittings, Ltd., sanitary fittings ; Henry Hope and Sons, Ltd., metal windows ; Kent Asphalte Co., felt roofing ; Viger Bros., Ltd., hall flooring; Osgood and Co., Ltd., tiling ; Horsley Smith and Co., gymnasia flooring ; G. Brady and Co., Ltd., metal roller shutters ; Higginson and Wright, Ltd., asbestos cavity decking roof to gymnasia ; Scaffolding (Great Britain), Ltd., gymnasia trussing ; Venetian Vogue, automatic venetian blind in hall ; Henry J. Greenham, Ltd., sand-lime facing bricks ; Field and Palmer, Ltd., felt water-proofing ; H. H. Martyn and Co., Ltd., library fittings ; Universal Metal Furring and Lathing Co., balustrades ; Hall and Co., blue engineering bricks ; G. and S. Allgood, fibre track ; Frazzi, Ltd., paropa roofing ; Cement Glaze, Ltd., wall surfacing ; Gent and Co., Ltd., clocks ; T. and W. Ide, Ltd., glass dome lights ; Jenson and Nicholson, paint ; London Brick Co., Ltd., hollow partition blocks ; Supalith, Ltd., wood wool slabs.

Duresco, Ltd., emulsion wall finish ; G. Johnson Bros., aluminium suspension beams laboratories ; Abbey Building Supplies, "Ankertite" box fillings in shell roof ; J. A. King, Lenscrete roof lights ; Wainwright Paving and Contracting Co., tarmacadam playground and roads ; Pilkington Bros., Ltd., armour plate glass to gymnasia ; R. Y. Ames, Ltd., agent for bricks ; Whitehead Iron and

General view of assembly hall from stage. Below : Main entrance, with assembly hall beyond.

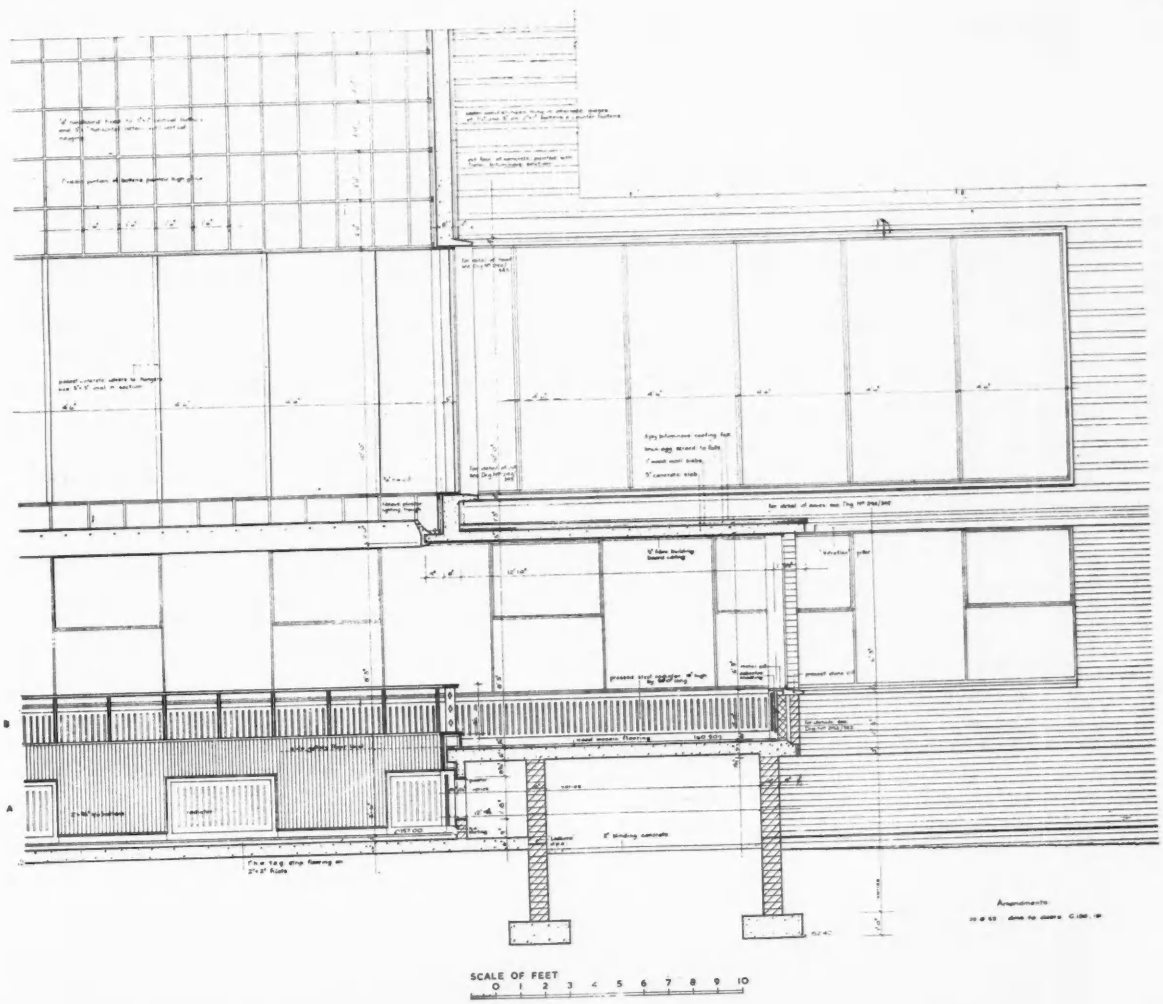


Steel Co., and Guest, Keen and Nettlefolds, mild steel rods ; Fencing (Shepperton), Ltd., fencing ; Square Grip Reinforcement, twisted steel rods ; Minimax, Ltd., fire extinguishers ; London Brick Co. and Eastwoods, Fletton bricks ; C. H. Jenner and Co., Ltd., plastering and grano pavings ; J. Young and Co., Vitreflex rain water goods ; W. H. Colt, Ltd., cedarwood shingles ; Odoni and Co., Ltd., cycle stands ; Gee, Walker and Slater, Ltd., joinery and precast concrete ; Hall and Co., wood wool slabs.

A list of the other firms connected with the scheme is given elsewhere in this issue.

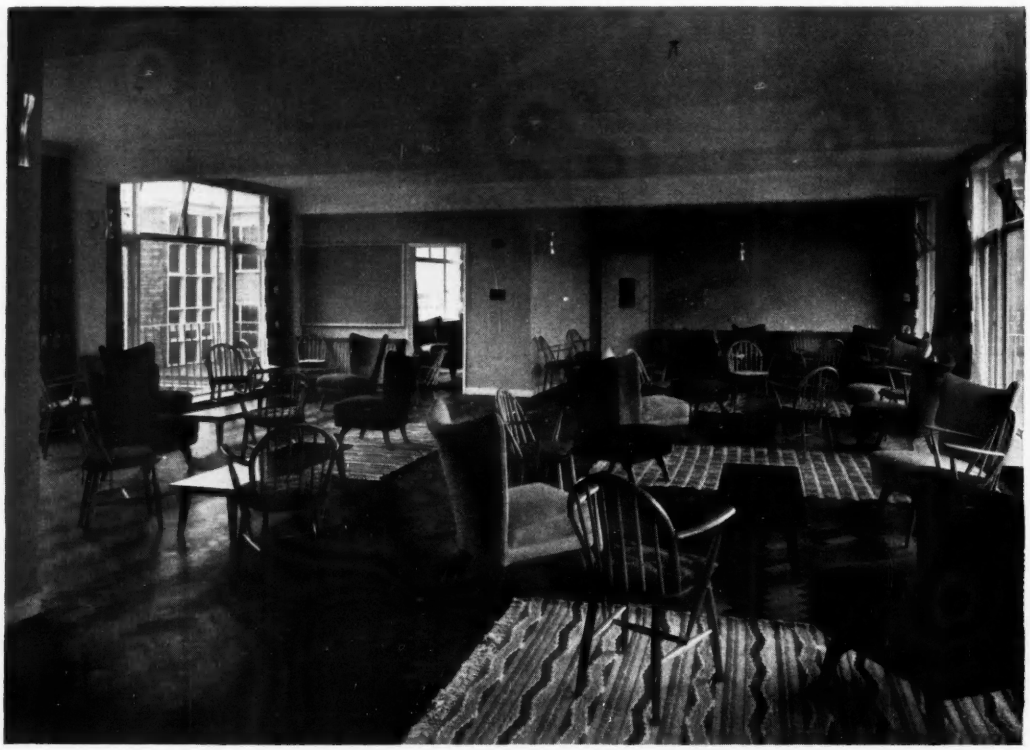
The clerk of works was Mr. T. Booth, and the agents for the contractors were Mr. G. Leslie and (latterly) Mr. D. F. O'Connor.

Stair from foyer to side gallery of assembly hall. Below : Main entrance hall.

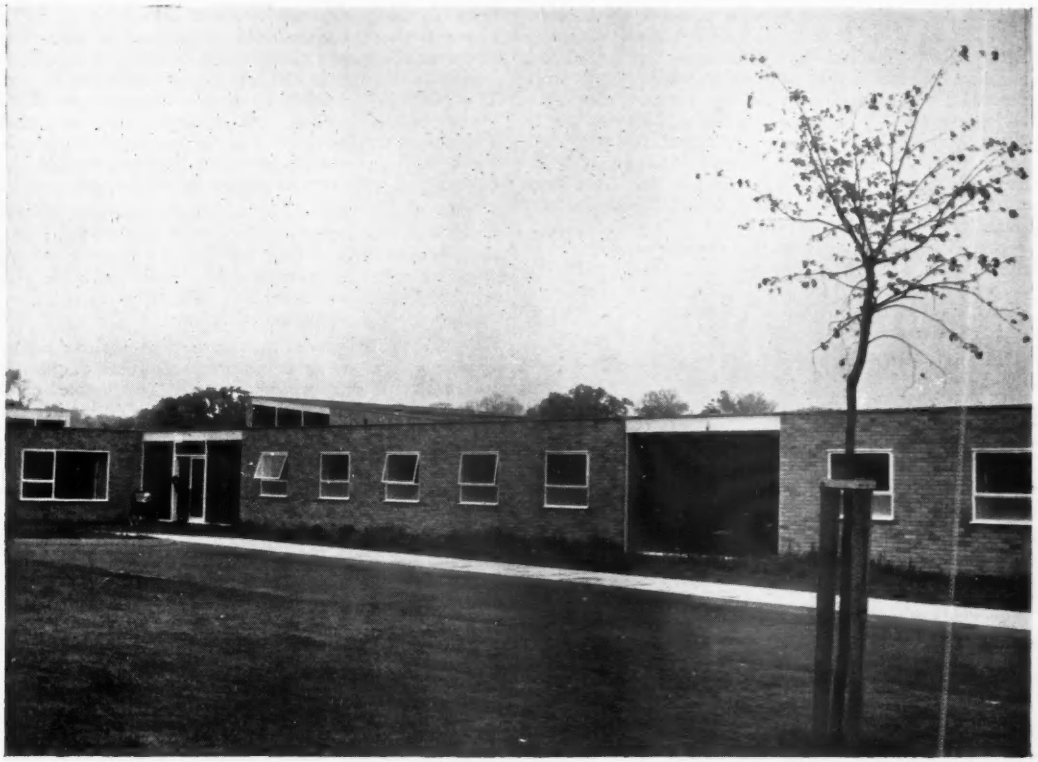


Above : Detail of side gallery in assembly hall.

The south block corridor which provides medical waiting space.



KIDBROOKE COMPREHENSIVE SCHOOL : General view of staff room. Below : A chemistry laboratory.



View looking north towards the entrance. Below : Block plan.

NUFFIELD DIAGNOSTIC CENTRE, CORBY NEW TOWN

Architect
R. LLEWELYN DAVIES, MA, ARIBA

Chief Assistant
J. WEEKS, ARIBA

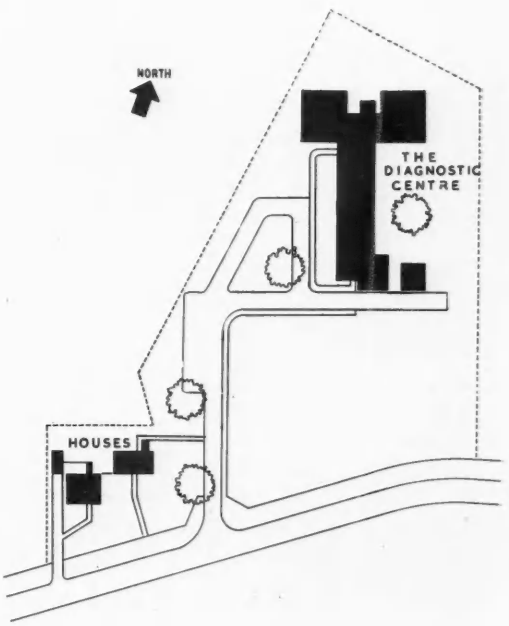
Senior Assistant
WALTER GODDARD

Associated Architects and Surveyors
GOTCH, SAUNDERS & SURRIDGE

Mechanical Engineering Consultants
J. ROGER PRESTON & PARTNERS

Builders
A. TAILBY & SON, LTD.

General Foreman
F. BURDETT



THE National Health Service planned three main kinds of medical care, run by three different authorities: hospitals and specialists, provided by regional hospital boards; family doctoring, by general practitioners contracting with local executive councils; and preventive and after-care services, by local health authorities. But it was originally hoped, and provided for in the Act, that "health centres" would be built throughout the country so that all the skills and services which patients need, outside of hospitals, could be brought under one roof. In three places experimental variations on the basic ideas behind the "health centre" proposal are being made with the help of funds from the Nuffield Provincial Hospitals Trust, in Manchester, in the new town of Harlow, and at Corby.

The Nuffield Diagnostic Centre at Corby is not a "health centre" in the accepted sense, if such there be, in as much as it is not provided by a local health authority, it does not include all the facilities laid down by Section 21 of the National Health Service Act, 1946, and the general practitioners concerned will not work as a group in the centre.

The family doctors of Corby will retain their existing surgeries, but patients needing more complete examination or investigation will be given appointments at the Diagnostic Centre, where the general practitioners will rent some of the consulting-rooms. Here the doctors will be able to examine their patients away from the rush of the surgery, and can consult any of their colleagues or arrange consultations with the visiting specialists.

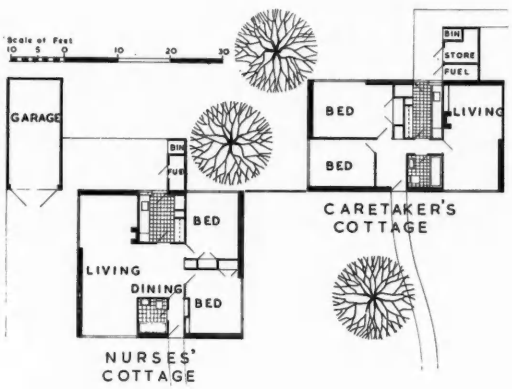
The Oxford Regional Hospital Board is providing and staffing the chest clinic and X-ray and physiotherapy departments.

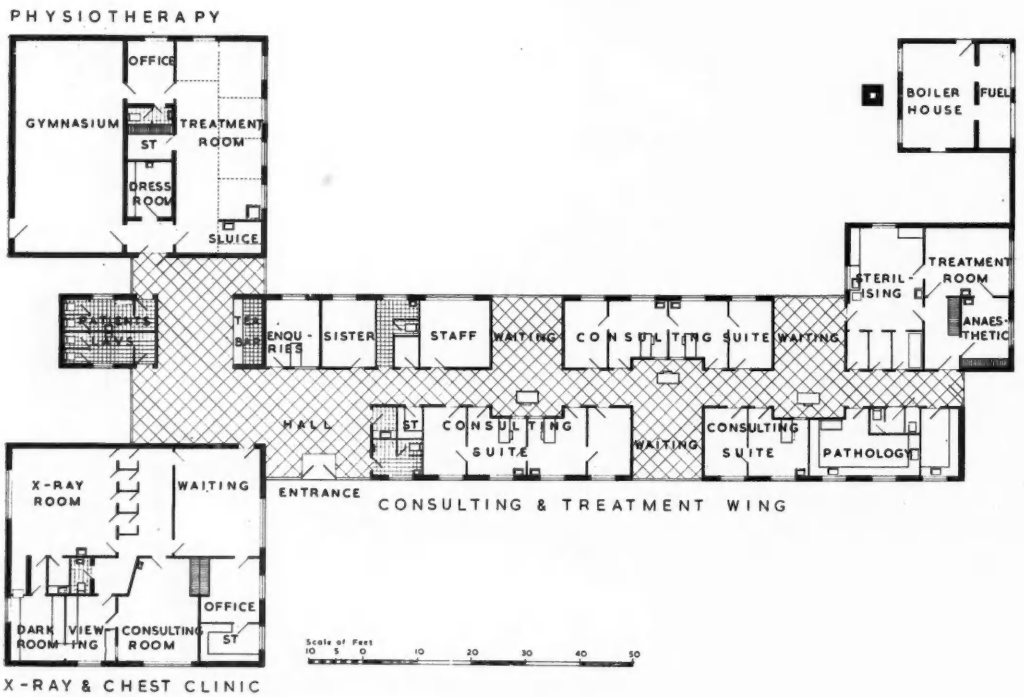
The Corby Urban District Council is providing £2,750 towards two cottages for the resident staff of the Centre—a caretaker, a sister-in-charge, and a radiographer—and is looking after the lawns and flower-beds. Messrs. Stewarts and Lloyds, Ltd., whose steelworks is at Corby, have given an assurance of financial support towards the running costs of the Centre during the early years of the experiment. The Nuffield Provincial Hospitals Trust has provided the capital for building and equipping the consulting and minor-treatment rooms of the Centre, and, in addition, it is making a contribution towards running costs during the first experimental five years.

The three blocks of the Centre—the consulting and treatment wing, the physiotherapy department, and the combined chest clinic and X-ray department—are grouped round a central entrance hall. Each department and each consulting suite has its own small local waiting-space for patients.

One of the objects of the experiment was to demonstrate that the essential requirements for a diagnostic centre could be provided at a reasonable cost. Economy was therefore important, both in the design and in the choice of materials and finishes.

Each wing is planned as compactly as possible.





In the X-ray and physiotherapy departments top lighting is employed to facilitate concentration in planning. The construction of the building is extremely simple ; the walls are of 11-in. cavity brickwork and support a timber roof. The facing bricks are light buff rustics and in the waiting-spaces and corridors, the internal walls are of fair-face brickwork, painted. The floor finish is thermoplastic tiles except in the treatment wing, where the floors are terrazzo, and the gymnasium, where they are wood block.

The simplicity of the design and finishes lends itself to the bold use of colour. This is being used to provide interest throughout the building and to help visitors to identify the different departments of the Centre. Each block of rooms has been given a different colour contrasting with the white ceiling and black-and-white chequered floor used throughout the Centre. The walls of the consulting, examination and treatment rooms, and of other rooms within the blocks, are painted a very light grey with a darker grey on door-frames and skirtings. The curtains in these rooms are in varying colours of the same patterned fabric. Terrazzo floors are white.

Including all services, site work, fixed equipment and boiler house, the contract price for the Centre works out at 4s. 6½d. a cu. ft., or £3 10s. 8¾d. a sq. ft. of floor area. Following is a list of sub-contractors engaged on the scheme :—

W. Briggs and Sons, Ltd., felt roofing; Boulton and Paul, Ltd., wooden windows ; Haden and Sons, Ltd., heating and plumbing ; Troughton and Young, Ltd., electrical installation ; Horsley, Smith and Co., Ltd., flooring ; Dent and Hellyer, Ltd., sanitary ware and fittings.

Alfred G. Roberts, Ltd., ironmongery ; Avery and Co., blinds and curtains ; A. E. Dean and Co., Ltd., X-ray apparatus ; Hemmings Bros. and Hilling and Co., curtains ; Finmar and Furniture Industries, Ltd., furniture.

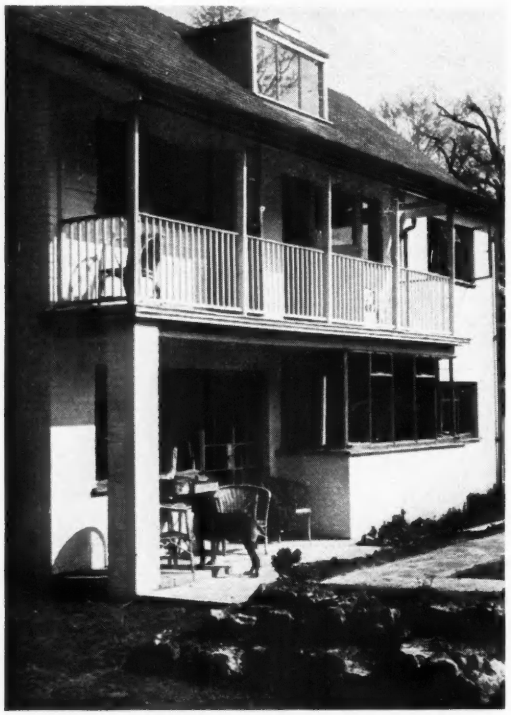
NUFFIELD DIAGNOSTIC CENTRE, CORBY NEW TOWN

View from north looking into the hall.

View of waiting space in consulting and treatment wing.

View through consulting suite.

South front.



Detail of loggia.

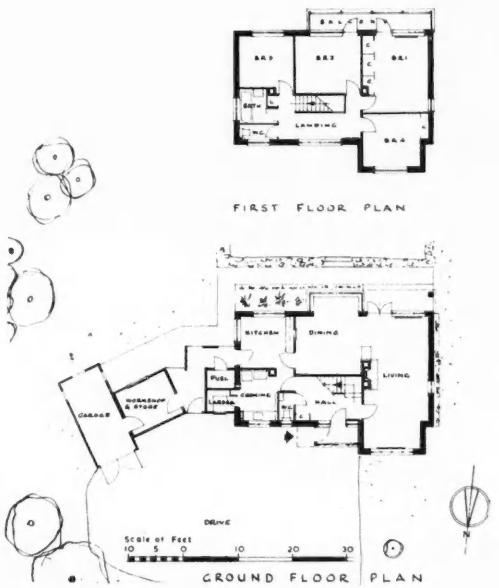
HOUSE AT SEVENOAKS, KENT

Architect
R. MICHAEL RAYNER, ARIBA, AA.Dip.

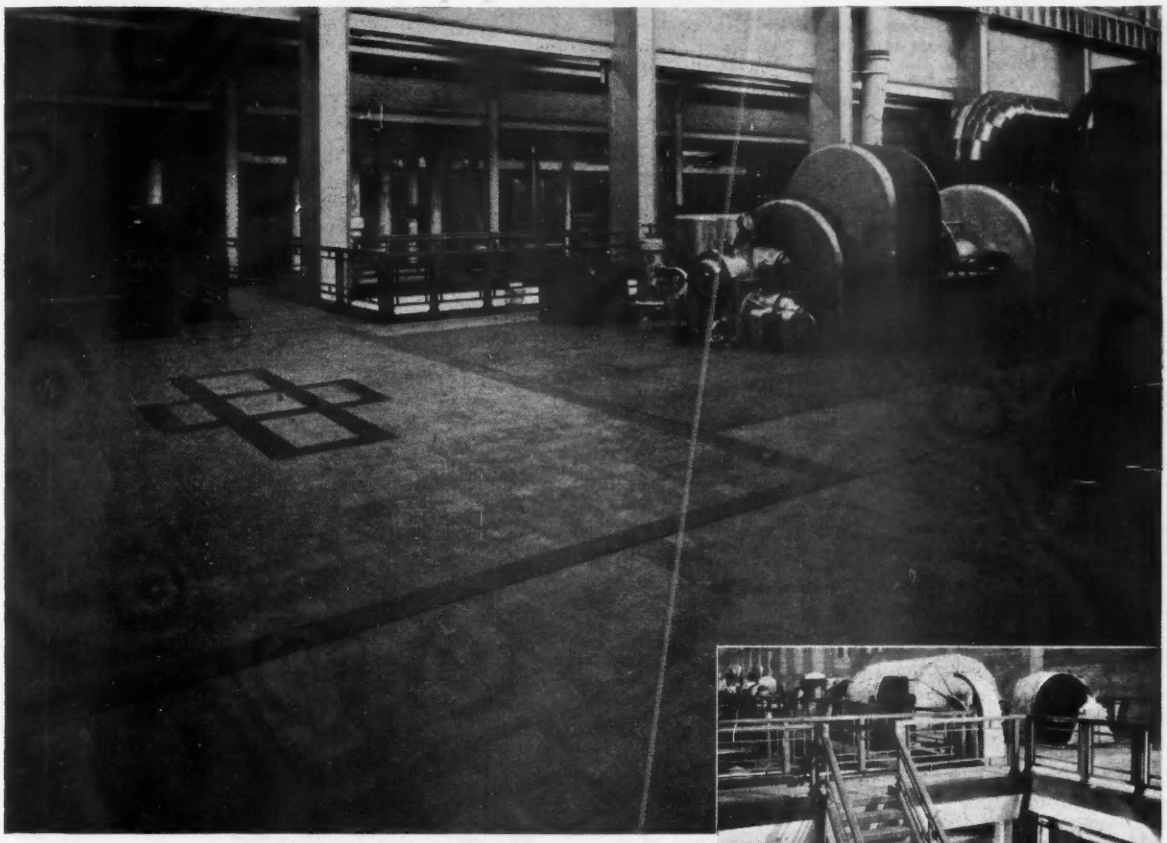
Builder
E. J. FLEMING

A HOUSE—built for Major M. J. S. Berkeley—was required for a family: two adults and three boys. Play space is provided in the roof where a room was constructed after the main contract had ended. The area is 1,500 sq. ft., excluding the room in the roof and the outhouses. Hand-picked sand-lime bricks have been used for the outer leaf of the cavity wall, painted with an external distemper. Vibrated cellular concrete load-bearing blocks form the inner leaf, giving better insulation at practically no extra cost. The roof is cedar shingled on 4 in. by 1½ in. rafters. Weyroc floor tiles are used in living-room and hall, kitchen and larder being in Marley tiles. The stair is oak. Space heating is provided by five radiators connected on a closed circuit to a Redfyre backboiler in the living-room. The Rayburn cooker heats the domestic hot water, and warms the kitchen. An electric cooker and immersion heater are for use in summer. Drainage is by the " one-pipe system " to a septic tank; rainwater pipes are exposed. The drive has been laid on the soil stabilisation method. The garage is precast concrete with aluminium doors.

Materials and suppliers and sub-contractors were: Blocks, Broad Acheson; bricks, Sevenoaks Brick Co.; windows, Crittall Manufacturing Co.; roof covering, Colt cedar shingles; sanitary ware, Olby of Penge; ironmongery, Lockerbie and Wilkinson; paint, Mander Bros.; ladder, Loft Ladders, Ltd.; electrical installation. Reeves and Leigh of Sevenoaks; floors, Modern Services, of Sevenoaks; drive, Walter Smith, Ltd., of Sevenoaks; and radiators, Dimplex, Ltd.



Left: The entrance front.



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CORRESPONDENCE

(*Concluded from page* 286)

ARCHITECTS' RESPONSIBILITIES

To the Editor of *The Builder*

SIR,—May I refer to your leading article of August 6, in which is mentioned a case where damages in the neighbourhood of £14,000 were awarded against an architect. It is indeed a very unfortunate case, and some points raised by the official referee must weigh heavily on the minds of every one of we architects to be a little more methodical in the future.

The equipment of an architect, as we know, must include a knowledge of the law so far as it affects his work. This is a very great responsibility, for if we count up the various statutes that affect our duty, the number might well be found to be in the neighbourhood of 300. The architect is bound also to keep records of all law cases affecting his profession so that he may advise his clients. He must prepare his plans and specifications with methodical reasonableness, and is expected to give a clear illustration of relative technicalities which, according to my records, number in all over 25,000, yet the ordinary man in the street who may receive a higher income than most architects can be excused lack of knowledge of the law. I have asked many carpenters and joiners whether they could give me a clear illustration and the number of technicalities to a four-panel door, which amount to 26, and not one has been able to do so on the spur of the moment, whereas an architect may be called upon to perform a similar feat and, if his memory may fail him, he lays himself open to be called "deceptive, evasive or unqualified."

It has always been held according to case law that the architect is solely responsible for his works, even though his plans (other than the copyright vested in them), specifications and all records are the property of the employer, if he has been commissioned to prepare such records, and he may only retain them as a lien for his charges until he receives payment. It would appear that he is responsible should he deviate from the particulars of his plans in his client's possession, whether or not the client be aware of the deviations.

Since architects have been held responsible for errors caused by clerks of works and by quantity surveyors, I have been very wary about sponsoring such assistance. My opinion of case law is that although submissions have been made that both the aforementioned are solely responsible to the employer, architects nevertheless have been held responsible for their faults. One example in point is where a clerk of works allowed bad timber to pass on to the works and defects accrued; even though the work was done and covered during his absence the architect was called upon to shoulder the bill.

Bills of quantities are considered as being the estimate of the surveyor who prepares them for the purpose of enlightening the employer of the approximate cost, but case law makes it clear that contractors must ascertain matters for themselves. In short, even though the employment of clerks of works and quantity surveyors is sponsored by architects, and they become in the immediate employment of the employer, architects have to carry the burden of their errors. Many quantity surveyors, in fact, find fit to excuse their errors by blaming architects' drawings and specifications for giving insufficient particulars. It is a pity they take on such work, for if they did not the architect could make arrangements for the contractor to prepare his own quantities for submission with his tender, thus providing documents which have validity in a court of law.

The suggestion is made in your leading article that there might be "some devolution of responsibility." It would be a good idea if such problems were discussed, but it would mean that there must be an implied warranty upon those employed that "they are of skill reasonably competent to the task they undertake" (*Harmer* v. *Cornelius* (1859), 5 CBNS 236).

W. MACDONALD

16, Chiswick-lane, W4.

SAFETY, HEALTH AND WELFARE REGULATIONS

To the Editor of *The Builder*

SIR,—It was with great satisfaction that I read the ruling of Lord Goddard (the Lord Chief Justice) in a recent case, *Regina* v. *Ball and Son, Ltd.*, and reported in *The Builder* of August 6.

This case was an appeal from a lower court's interpretation of a "working place" as defined under regulation 24 of the Building (Safety, Health and Welfare) Regulations, 1948, and the Lord Chief Justice, in holding that the regulations were designed to protect workmen from falling and passers-by below from being struck by falling objects and that the term "working place" was a place where work was being done has, one hopes, cleared up once and for all a controversial point.

There has been far too much neglect to observe this regulation on contemporary constructions, and it appears advisable and desirable to have suitable notices displayed on all building sites concerning this particular regulation's implications.

Another regulation in need of publicity and a classic judicial utterance is Regulation 90, which provides for the control or proper lowering of tools, materials, debris and other objects. It is quite common to witness scaffolders when dismantling dropping fittings, putlogs, etc., from great heights and for them, if challenged, to contend that their mate below is a "look-out" and, therefore, the regulation is being complied with, notwithstanding the fact that the mate in question is usually very busy trying to cope with the collection and stacking of discarded pieces being dropped down much faster than he can shepherd them in.

I wonder if it was the original intention of those who first formulated this regulation that uncontrolled dropping of objects was in order under these circumstances?

Another common practice is to throw out of window openings or off balconies, sometimes 80 ft. to 90 ft. high, unwanted debris. And if look-outs are provided they usually have to trim the debris between falls. The dust, impregnated with its usual percentage of uric acid, is broadcast considerable distances for all and sundry to breathe, to catch in their eyes and ears, and to have their clothes contaminated. Quite a goodly proportion of these potential disease-carrying dusts are eventually deposited on public transport upholstery, taken into homes, cinemas and other places where we justifiably expect, in these days of enlightened hygiene and high contributory rate health schemes, to enjoy some degree of safety from contagion by neglect.

It appears that only a test case, possibly after some epidemic is traced to the above practices, will enable us to obtain a legal definition of the phrases "in any place where proper lowering is not practicable . . . adequate steps should be taken *where necessary* to protect, etc." (Reg. 90 (2)) and so hold out hope of improving building workers' health and lessen absenteeism from trivial illnesses.

H. E. CAMPBELL
[MICW, AISanE]

40, St. Paul's-road, N1.

COURTESY IN TENDERING

To the Editor of *The Builder*

SIR,—As painting contractors, we find that a very large proportion of our overheads can be attributed to our estimating department, and whilst we are always ready to co-operate with firms in the industry, we do think we are entitled to a job at least now and then, even if only to offset the heavy expenditure incurred in submitting tenders. Here we would mention that many of the larger builders seemingly use our quotations to check their own painting departments' prices, only waiting for mistakes to occur before they consider giving the order to a sub-contractor. It is true that we are sometimes notified of the results of tendering, but in the majority of cases we do not even have the courtesy of an acknowledgment, not even when very large and intricate bills of quantities are involved.

We are wondering whether the builders themselves are treated in the same way so far as their own bills are concerned, the major portion of which would, undoubtedly, have been priced for them by various sub-contracting firms.

We feel we should add that none of the foregoing remarks apply to the many clients for whom we are pleased to work.

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DEVON COUNTY ARCHITECT

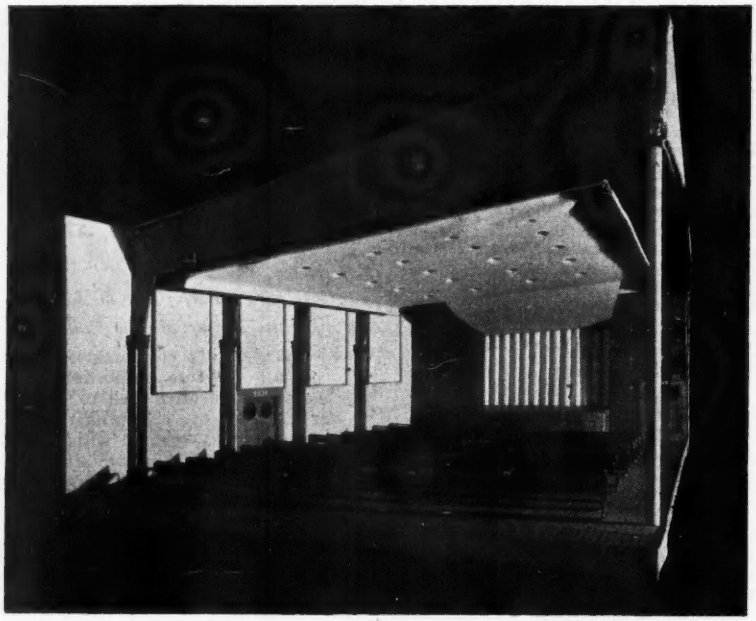
MR. RODERICK NELSON GUY, ARIBA, of Keston, Kent, has been appointed Devon County Architect. He is at present Deputy County Architect for Middlesex, and he succeeds Mr. H. V. de C. Hague, who is retiring. Mr. Guy will take up the appointment early in November.

PLANNER FOR NEW TOWN

APPLICATIONS are invited by the Basildon Development Corporation for the appointment of a grade II planner on the staff of the Corporation's Chief Architect and Planner, Mr. Noel Tweddell, ARIBA. The post carries a salary within the £1,135–£1,340 range, according to ability and experience. Further details will be found advertised in this issue.

LCC ARCHITECT'S DEPARTMENT

APPLICATIONS are invited by London County Council for the post of architect in grade I (salary, £1,071 to £1,224) to lead a group engaged on part of a programme which includes fire stations, homes for the aged, children's homes, a power station and other industrial buildings. Further details are advertised.



The Corn Exchange at Maidstone is to be reconstructed as a Municipal Theatre. This model shows how the theatre will appear when the work is completed.

RECONSTRUCTION OF THE CORN EXCHANGE AT MAIDSTONE AS A MUNICIPAL THEATRE

An Interesting Architectural Task

SOME particularly interesting architectural problems will be resolved in the reconstruction of the Corn Exchange at Maidstone to form a new Intimate Municipal Theatre. The project, on which work has now started, has been designed by Mr. Clifford Worthington, FRIBA, in association with Mr. Sidney F. Dixon, Borough Surveyor.

Briefly the scheme consists of (1) Erecting an extension to the existing hall to form a new stage measuring internally 40 ft. wide, 25 ft. deep by 35 ft. high from stage level to roof, and specialist equipment for drama production. (2) Demolishing a three-storey cottage and part of an existing warehouse on the site of the proposed extension.

(3) The conversion of the first floor of an existing adjoining store to male and female dressing rooms with lavatory accommodation. (4) The conversion of an ante-room into refreshment bar for joint service to concert hall and theatre. (5) The improvement of Earl-street public entrance, and (6) the acoustical treatment of the auditorium in conjunction with the existing scheme of natural ventilation, miscellaneous repairs, renovations and redecoration.

The principal problems in connection with the auditorium revolve round acoustics and ventilation, and in order to obtain tolerable conditions for the patrons in these respects, and, at the same time to solve these problems economically, it was decided not to interfere with the existing natural system of cross ventilation which consists of openable side lights to the continuous roof lantern, hand-operated by Arens gear control brought down to balcony level on the rear wall.

A suspended ceiling at a height of 20 ft. was adopted and this, combined with the economic necessity of retaining the existing form of ventilation, dictated the unique form of suspended floating ceiling type of construction hung to lattice girders which solved these initial problems.

SUSPENDED SOUND BOARD

For vocal sound to reach the rear of the auditorium travelling some 60 ft., it necessitated amplification and correctly directing the sound waves without undue reverberation by means of an appropriately shaped sound board suspended over the forestage and the suspended ceiling similarly designed as a sound reflective surface. In order to prevent echo effects reflected from the rear wall of auditorium this area is covered with sound-absorbent material.

The architectural conception for the auditorium is based upon the use of light and shade, colour and texture in juxtaposition with the architectural shapes or space-enclosing elements such as the existing free-standing classical columns along the flank walls, the floating ceiling and the proscenium.

Electric light is used as the principal decorative theme by employing special tungsten lamp fittings semi-recessed in order to diffuse the textured white-painted soffit area with a soft blue-coloured light and producing, at the same time, an overall pattern of starlight effect.

Principally the design is directional so that the eyes of the audience are drawn towards the proscenium. Here the opening is draped in generous folds with silver-grey heavy velour curtains lighted indirectly from behind the curved sound-board with a warm-coloured soft glow and directly by cold-coloured front-of-house spotlights. Some practical experimenting is anticipated in this respect to obtain the desired effect.

DECORATION

The proscenium walls are lined with scarlet-coloured linoleum squares framed with waxed oak, and small ornamental fibrous plaster plaques with gold leaf finish are centred in some of the squares.

The acoustic tiled wall panels are painted broken white in pearl-grey frames, the hardplaster flank walls are finished with eggshell lilac and the columns are painted cornflower blue.

The stage extension is constructed of a concrete-encased steel frame with a system of beams at stage, gallery, grid and roof levels and sandlime brick wall panels fairfaced internally. The stage floor and roof is of Smith's beams, the former covered with 1¼ in. tongued and grooved hardwood boarding and the latter cement screeded to falls and covered with bituminous felt underlay finished with a mastic asphalt.

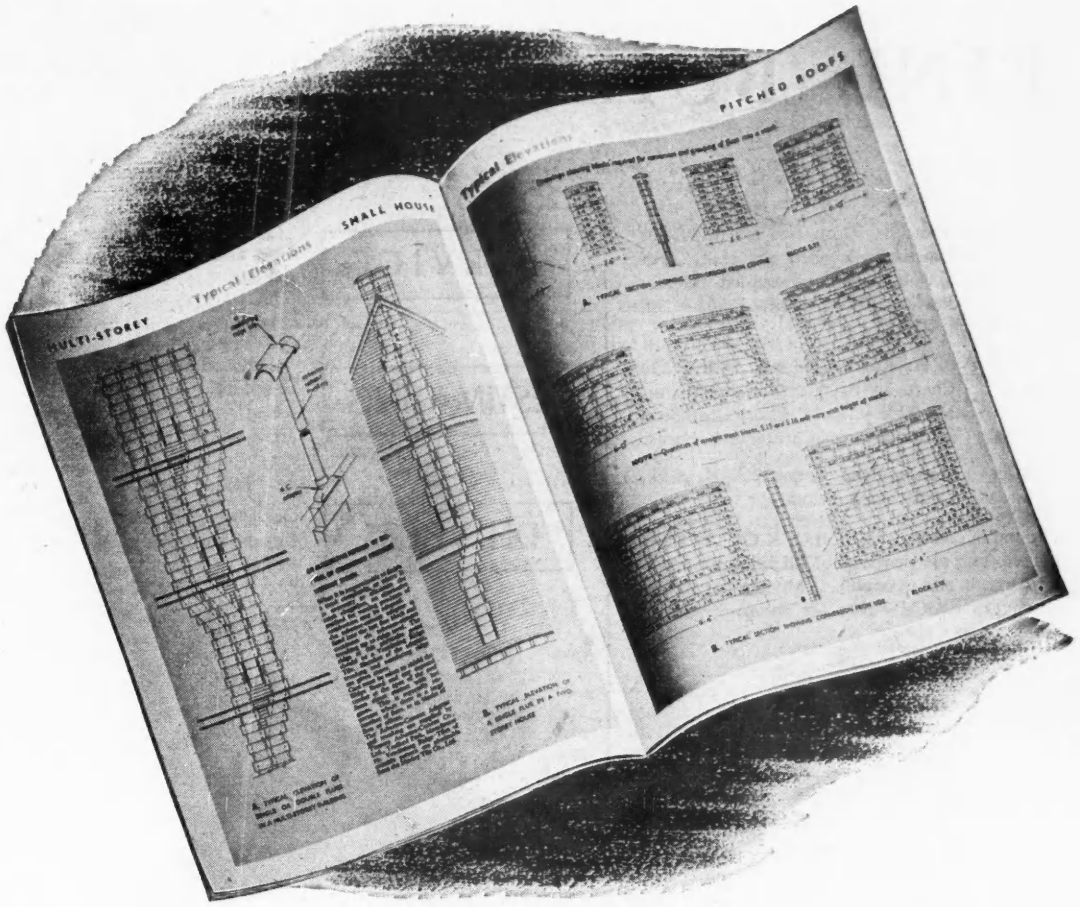
In view of the limited floor area available for the provision of dressing accommodation it was decided to arrange the planning so that one large room was provided for either male or female use in addition to smaller rooms, each to be used exclusively for males and females with separate lavatory accommodation. In order to provide complete separation of this section of the building from the public, and yet provide for intercommunication when occasion demands, a fire-check self-closing door is located in the corridor, which also reduces fire hazard.

The refreshment room will serve both the concert hall and new theatre and is equipped with bar counter and glass-fronted wall shelving. In order to reduce noise transmission, the boarded floor, which is uneven and knotty, is levelled with a latex cement and covered with rubber tiles.

The total cost of the project is £21,000. The quantity surveyor is Mr. Peter Lawrence, ARICS, and the general contractors, Messrs. Charles Walter, Ltd.

COURSE ON TIMBERWORK

A RESIDENTIAL COURSE on Timberwork and Roof Repairs will be held by the York Institute of Architectural Study, at the St. Mary's Hotel, York, from September 13 to 18. The syllabus will include materials and repair methods, and coach visits will be paid to places near York. This is part of a series of one-week specialised courses intended to supplement the annual two-week general courses, of which the next will take place in March, 1955. Particulars are available from the Secretary at St. Anthony's Hall, York.



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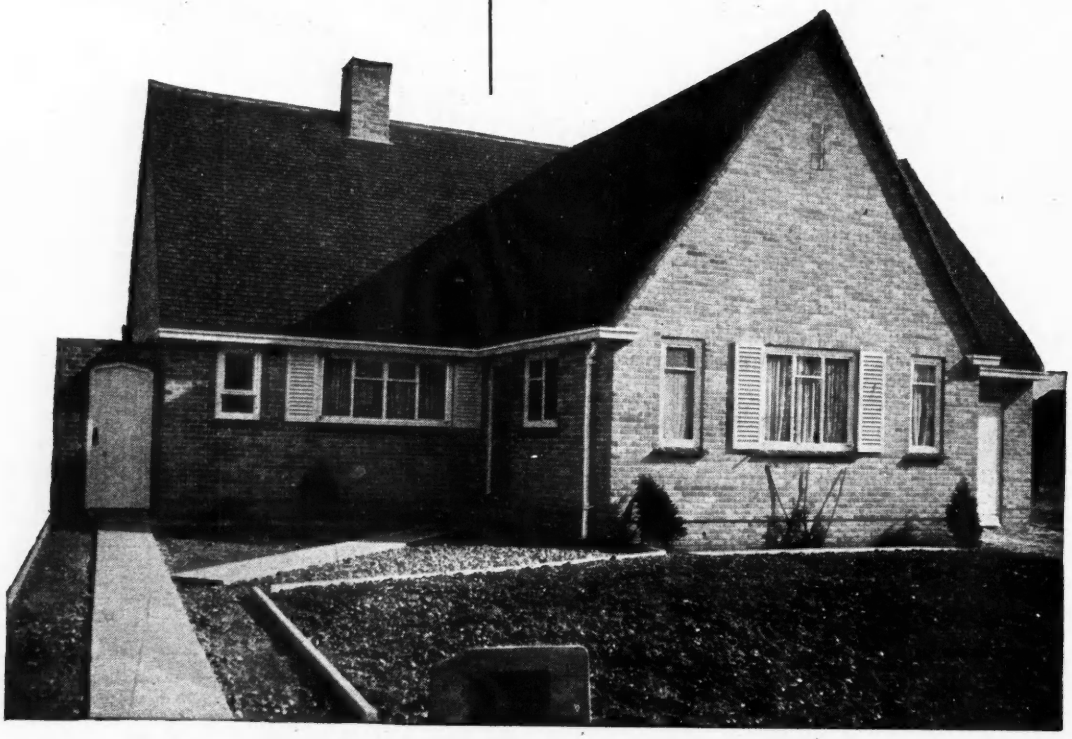

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RICS EXAMINATIONS

By Arthur J. Willis, FRICS

IN the August issue of the RICS Journal are published statistics about the 1954 examinations. These show the percentage of passes in all sections and all centres as 43.2 per cent. in the Intermediate and 30.8 per cent. in the Final. These compare with

	1951	1952	1953
Intermediate	53.6	37.0	38.7
Final	58.7	44.3	43.7

There are reports current that for quantity surveyors (or some cross-section of them) the figures for 1954 are 15 per cent. (Inter.) and 9 per cent. (Final) with 0.5 per cent. in one particular subject. The 1953 and 1954 official percentages mean that, even allowing for a certain number giving up the attempt, on an average a candidate must sit twice to pass each examination, which means that some sit three or four times or more. If there is any truth in the quantity surveyors' percentage quoted, some drastic action is necessary. There is no indication of the proportion of candidates who pass the examination at the first attempt, but such an event is in my experience exceptional.

EFFECT ON SALARIES

Failure in the examinations is not now of much account. Salaries are not affected. In London £450-£500 a year is paid to those whose only professional qualification is "Failed Inter." (two, three or even four times), because they can do their job well. "Failed Final" seems to be worth about £600, with rises according to the number of failures. To principals these failures are a nuisance, because assistants must spend anything up to seven to eight years attending evening classes three or four times a week, which deprives them of energy that might be given to their work, and makes them useless for overtime work in times of pressure. In addition, time off must be given for "private study" for a prolonged period as a condition of deferment of military service. The deferment authorities, moreover, are becoming inquisitive: they do not understand a man failing repeatedly —they think he does not work.

But the effect is seen farther afield. Advertisements of public authorities for quantity surveyors, which used to make membership of the RICS a condition of candidature for appointments, are now introducing "or other appropriate professional qualification" and even mentioning other institutions by name. Many such authorities have been leaving the training of their staff to private offices and picking the fruit when ripe. The fruit is dropping and will have to be eaten unripe. There is, too, a drift amongst students towards what I might perhaps be allowed to call the lesser lights in the firmament. The Institution will not face the fact that they exist.

COMPLEX EXAMINATIONS

The main cause of the trouble is the complexity of the examinations. In the three professional examinations a candidate must take in all 21 to 24 different subjects (according to his subdivision), some in more than one examination and some with more than one paper in the same examination. Land surveyors with 13 subjects only are an exception and seem to have succeeded in confining their examination to their own job. Besides reaching 55 per cent. in certain compulsory subjects and averaging 55 per cent. on the whole examination, a candidate must attain a "reasonable standard of proficiency" (undisclosed) in every subject. He may take not more than two single subjects again: if he fails in more he must retake the whole examination.

In the quantity surveying sub-division there are 22 subjects in the three examinations, of which I reckon nine are essential for the assistant in the office. The remainder (or some of them) might quite well be the subject of a post-graduate course for Fellowship, following two examinations only in the nine subjects for Associateship.

YEARLY EXAMINATIONS

A contributory cause to the prolongation of what has become a career of studentship is that the RICS seems unable to hold its examinations more often than once a year. Other institutions do. When I raised the question before the war, I was told that, owing to the number of subjects and examiners, it was not practicable to hold the examinations more often. A student who has not reached the "reasonable standard" in a subject in the Inter. examination must wait a year before he can take the single subject again. However well he may have done in the remaining subjects, he must wait for two further years after passing his single subject before he can take the Final.

The only justification for applying the term "surveyor" to all members is the one and only subject in common to all subdivisions, viz., "surveying and levelling," and even that is modified to suit each subdivision. The Institution is now an agglomeration of eight professions. The time has come when it should face realities and relate the syllabus for each section more closely to the practical needs of the members concerned.

QUANTITY SURVEYING IN CANADA

A SCOTTISH correspondent has written to us to inquire as to the possibilities of employment in Canada in quantity surveying. We submitted his letter to Mr. C. T. Every, CBE, FRICS, who has recently visited Canada in the course of a business trip round the world, and points from Mr. Every's reply are, by permission, now given:

The general tendency at the moment in Canada, particularly in the east, is to follow American practice and, as a result, the private quantity surveyor does not generally exist. I am, however, of the opinion that this may well not be the case in future and, indeed, am hopeful that when some of the bigger British interests get involved in major works of construction that they will be unlikely to be satisfied with such a loose form of cost control. It is possible that in some cases they may insist that these major works be carried out much more in line with British practice, and British quantity surveyors may well be used there. If and when this happens I think the benefits will be clearly seen, and it could result in procedure being adopted which is much more in line with the usual British practice.

THE QS IN VANCOUVER

So far as my own experience during my lightning tour across Canada is concerned the only place I struck where quantity surveyors are in fact being used was in Vancouver, where I met two firms in private practice as quantity surveyors. In a way this is readily understandable, because British Columbia tends to be very British and would, in consequence, be likely to be the first province to adopt British methods.

The partners of one of these firms told me that they had been trying for three years now to get bills of quantities accepted in Vancouver and had been fighting a very uphill battle, and I gather that up to the present the bulk of their time had been occupied in working for contractors, in either settling accounts or preparing estimates. They had, however, just a few weeks prior to my visit, produced their first bill of quantities, which was then at that time out to tender, and this, so far as they were aware, was the first case of a tender being called for in British Columbia on bills of quantities somewhat in line with the usual British practice. The job was a new welfare building, and I gathered that they had seen a Committee and had persuaded them of the usefulness of bills of quantities and had undertaken to provide the bills of quantities for nothing, their idea being that it was worth their while to do this job for its advertisement value, and they were hopeful that the results of the tenders might give them a good talking point for selling bills of quantities to other people in future.

BASIS OF MEASUREMENT

As you can imagine this meant an enormous amount of work for them because not only had they in the first place to make considerable amendments and amplifications to the form of contract in order to incorporate the use of quantities, but they had to have some means of establishing the basis of the measurement. They did this by printing a document which they called "Proposed Standard Method of Measurement of Building Works." This is a document largely based on our British Standard Method but adapted and in many ways simplified for use in Canada and, of course, making use of the accepted Canadian trade and technical terms. You will see, therefore, that as a result of the efforts of this firm some considerable spade work has been done in Vancouver along these lines and there is a certain section of the architects and contractors in Vancouver who have been introduced to a form of standard method of measurement and a contract where quantities based on a properly drawn bill of quantities form part of the contract.

A second firm I encountered was equally full of optimism. Both firms reckoned that in two or three years quantity surveying somewhat along British lines will be firmly established in British Columbia.

My own view is that they are undoubtedly optimistic in expecting such a radical change to take place in two or three years, but I think that in five or six years this might well be the case and once it does begin to catch on the few who are established there will, I am sure, take steps to see that they get some sort of ordinance or form or registration to secure their position and prevent others from outside rushing in to spoil their ground, somewhat in the way the architects have already protected themselves.

While they are building up to this happy position they will undoubtedly have some pretty lean times and their only hope of making any money at all will, I think, be in preparing estimates and settling accounts for contractors.

CONTRACTORS' ORGANISATIONS

I saw something of some of the big contractors' organisations while I was there, and in particular spent a good deal of time with one very big American firm who let me see over the whole of their organisation, covering design, planning, estimating, programming, materials ordering and construction. This is probably one of the biggest organisations in the world and is run strictly on the orthodox American lines, whereby, as you will see from the outline I have given, they do everything themselves and they do, of course, do quantity surveying in that there is an estimator who takes off the quantities of material and prices them in order to build up the estimate. This chief estimator, who is estimator and quantity surveyor combined, has a good deal of very responsible work to do but is by no means a highly placed person in the organisation.

MORTGAGE VALUATIONS

I would add that the Central Mortgage and Housing Corporation, whose head offices are established in Ottawa, have during the last twelve months taken on something between 70 and 100 chartered surveyors for the purpose of assisting with the vast housing programme they have, largely, I gather, by vetting properties for mortgage. Most of these are valuation surveyors, but there are one or two quantity surveyors among them.

To sum up, the short answer to your correspondent is that there are undoubtedly possibilities for quantity surveyors in Canada but the possibilities are at the moment latent and it will be quite an uphill struggle, and possibly quite a long one, to get anything like a worthwhile private practice established, and for many years it is likely that much of the work would be work for contractors rather than for the employer. One of the first essentials must, however, be to acquire the local know-how, and probably the best way of doing that is to start by getting a job with a Canadian contractor.

** The address of the Canadian Construction Association (comparable to our NFBTE) is 56, Sparks-street, Ottawa, Ontario, Canada. ED.

STAIRS FROM THE STARS

By Basil Marriott

THOSE who are submerged under the realities of that long-running hit "The Littler House," dictated by the Housing Manual, will share my indebtedness to a colleague for recently suggesting the existence of a wider horizon, and at the same time a subject for urgent socio-aesthetic research, now that an era of greater licence in domestic design is dawning.

He finds himself, in his own words, "involved with the design of some small(!) houses at around the ten thousand pound mark" for the sort of clients who (without unkindness and indeed often in their own words) may be described as self-made. Such amateur and very human constructions are of course wholly admirable, but the blueprints apparently followed sometimes tend to suggest the assembly of a kit of prefabricated "parts" different from those the assembler would naturally play if no audience were present.

The Big Business Man and the Captain of Industry feature prominently in the cost of such productions—"in period" sometimes as neo-Elizabethans—and at home they display the characteristics of the Gracious Host who Doesn't Forget Old Friends. The female lead is correspondingly stage-struck, and the *decor* chosen is stagey and calls for a larger-than-life proscenium.

In post-war America, a familiar phenomenon was known as "Englishman's Stomach," sudden expansion to pre-austerity standards being attended by painful and palpable creakings. Literally cribb'd, cabin'd and confin'd by our housing accommodation, some pains will inevitably attend the transfer of our Design for Living to more commodious premises. As with the end of meat rationing, a younger generation will have to learn that familiar stand-by's have mysterious insides and a bewildering variety of "cuts" or plan. We must accustom ourselves to baronial scale in building as well as at the carving table, and may not quite know what to do with it all.

"ROSE-MARIE STAIRCASE"

The gun-room, library, morning-room and drawing-room formula of Pinero comedies offers little useful precedent for those whose social life has focused on the television set in the lounge, and I pricked up my ears when my colleague seemed disposed to expand on his provisional plans for his enviable *embarras de richesse*. Asked what, if any, common factor was apparent among his dream-clients in outlining their dream-houses, "it was," he said with some reverence "my wife who put her finger on it: what she calls a Rose-Marie Staircase."

Congratulating him on his alliance with such an accomplished psychologist as well as author of so expressive a phrase, I pressed him to amplify. The secret dream of Little Woman wed to Big Business it appears, is a *grand escalier* down which to make a gracious entrance, the timing and duration of which is commensurate with the arduous climb which her arrival at the top, with Sherpa husband, entailed.

Bless her little heart—if that is how she sees herself, with balanced tread, dazzling smile impartially warming pit and stalls, scattering invisible rose petals to the inaudible strains of selections from the latest musical, who are we to gainsay her while the going is good—and considerably "easier" than the 13-up-bulkhead-in-the-bathroom of yesteryear, at that price!

A NEW APPROACH

But this calls for a new architectural approach: the sartorial magnificence and hallmarked appointments which, in advertisements, attend the fortuitous and joyful discovery of that tin of Spinster's Beans when Hubby Unexpectedly Brought the Boss Back to Dinner need a worthy setting for the Girl Who Took Off from the Typing Pool and Made the Grade (*thinks:* "and all due to that nice architect who didn't forget the stairs!").

Vertical space is the problem: the open plan gives a good, long run-in, but at a shallower angle than the graceful circlings of such flights of fancy require, and we must ensure happy, not half, landings. Though notoriously difficult to treat elevationally, the extra height beyond the traditional proscenium may provide the clue, and private accommodation can no doubt be added at lower level as mere appendages to the "good theatre" of which a Worm's Eye View of a rehearsed entrance is the essential.

So be it! All the world's a stage, and the sky's the limit. But, oddly enough, it is we architects who are supposed not to have our feet firmly on the ground.

BOOK

DESIGNERS IN BRITAIN. Compiled by the Society of Industrial Artists and edited by Herbert Spencer. Allen Wingate (Publishers), Ltd. 158 pp. of plates. Price 45s.

A BRIEF introduction to this handsomely produced volume explains that it is the fourth number (covering 1952-3) of a biennial publication; the work illustrated includes furniture and interiors, lighting, radio, domestic equipment, glass, pottery and ceramics, textiles, carpets, shoes and leather goods, industrial equipment and instruments, transport, prefabricated buildings, exhibitions and murals (including the Festival of Britain), display, packaging, stationery, typography, posters, Press advertisements, book-jackets and illustrations.

Very few of the examples are directly concerned with actual buildings, though there is a marvellous air-view of the South Bank Exhibition; and the "paper sculpture" of golfers, also from the Festival of Britain, is the most amusing thing in the book. Of the other items, there is a fair amount of furniture in plywood and tubular steel, several excellent designs for industrial equipment and portable radio, a few attractive specimens of glass, pottery, and textiles of the plainer sort.

As for the printing, stationery and advertisements, the standard seems to have fallen and to have lost a sense of direction and dignity, much of the work being either fussy or eccentric. It is interesting to note the revival of that recently ridiculed Victorian article of furniture, the "Canterbury" (Plate 7), which one imagined had disappeared for ever.

M. S. B.

COST OF BUILDING CHART

Allowance for Output

A READING correspondent raises an interesting question on our "Cost of Building Chart," arising from the factor of output in building. He is particularly interested in the cost of buildings of a domestic character between March, 1947, and February, 1952, and writes:—

"I was advised that calculations based upon the Ministry of Works' Price Index for materials and the known increases in wage rates gave an overall increase of 40 per cent. between March, 1947, and February, 1952. My builder has said that, while this was correct on wage rates, etc., allowing for reduced output, the actual increase was about 50 per cent. and his prices when tendering had had to be increased by this amount.

"On this account the figures shown in your Chart would have to be appreciably increased to arrive at the actual rise and, in fact, I believe the present cost of traditional building is now about four times pre-war rates. An estimate I received about a fortnight ago for a medium-sized house with a large loggia and double garage, including central heating in the house, works out at a little over 4s. 8d. a ft. cube, whereas before the war I believe the cost would have been about 1s. 2d."

Messrs. H. J. Venning & Partners, FF.RICS, who annually prepare this Chart,* write:—

"Your correspondent points out that he has been advised that the calculations based upon the Ministry of Works' price index for the period between March, 1947, and February, 1952, is 40 per cent. If he refers to the Chart he will find that this reflects a wage increase of 43 per cent. and material increase of 50 per cent. If he applies the usual ratio for domestic work of 40 per cent. labour and 50 per cent. materials he will then arrive at an average increase of 46¼ per cent. From our experience this is a closer percentage increase than the 40 per cent. he mentions.

"Your correspondent then goes on to state that his builder maintains that allowing for reduced output (presumably in this period) the actual increase was about 50 per cent. Whilst we agree that 46¼ per cent. is nearer the actual increase, we do not agree that generally during this period there has been a drop in output. In fact, we consider that there was a steady drop in output during the war and the few years following, but this became checked around about 1947 and since that period there has been a general increase in efficiency both in direct labour and organisation which in some instances increased output and efficiency. It is obvious that we can only chart the increases based on actual labour rates and average material increases, and any estimate of the drop in output compared with pre-war figures would be purely speculative.

"In studying the Chart's latest figures it will be noted that the building cost index has a gap of 75 points between the material and wage index; this equals a 30 per cent. increase over 1939 figures. This difference represents increases in cost not reflected in wages and materials, and covers such items as the decrease in output, increase in general cost of overheads and possibly increased percentage of profit now obtained generally. A further analysis of this last point would prove that on an average that, if we take the increased cost of overheads to cover the additional clerical work for PAYE, increase generally for staff working incentive schemes and other office items, this would account for an average of approximately 10 per cent. and the balance of 20 per cent. generally for loss of output and bigger margin of profit.

"Your correspondent then goes on to say he believes the present cost of traditional building is now about four times pre-war rates. In our opinion, on general contracting our figure of 330 per cent. is a fair average increase, but we do agree that on the smaller type of domestic building, especially where a contract is placed for one house only, this could easily be four times. This is explained by the fact that this type of work before the war was done by the type of contractor or speculative builder who usually had the available piecework labour who would quote extremely keen rates for labour only for most of the trades involved. This factor vanished completely after the war and although it is now coming back again in a small degree it has not reached the competitive resources it had up to 1939.

"You will appreciate that we have only touched a fringe of the main reasons for the variations in increased cost in comparing pre-war values, but we hope that this brief review will help your correspondent to realise the reasons for certain anomalies that seem to have arisen in comparing pre-war with post-war costs."

* *The Builder* Cost of Building Chart, obtainable from the Publisher, *The Builder*, 4, Catherine-street, Aldwych, WC2, price 1s. 3d. post free.

TWO INTERESTING LEGAL CASES

Liability for Defective Electrical Work

[*From a Correspondent*]

THE case of *Sellers v. Best*, heard at York Assizes on February 16, 1954, and reported in the All England Law Reports on June 17 last is of interest to all contractors because it is concerned with the division of responsibility between those who do electrical work in a building and the particular electricity board who arrange for the actual supply.

In this case, the wife of the owner of the house was electrocuted through a defective earth. An electrical contractor had installed at the plaintiff's house an electric boiler together with a new circuit but had failed to supply a fully efficient earthing system for the circuit. The North Eastern Electricity Board had connected up the loose wires and did not deem it their duty to control and examine the work already done as they considered that a strict division of responsibility took place at the meter and that everything beyond was the responsibility of the occupier or whoever he instructed to carry out the work. The electrical contractor, the court decided, had been negligent and damages were awarded to the plaintiff, the husband of the deceased, amounting in total to £530 6s. From a legal viewpoint the important matter was whether the Board were responsible. This, indirectly, is of pecuniary interest to the contractor because if responsibility is divided the amount of damages for which he is personally liable is reduced.

The Court held that the Board were not liable. Mr. Justice Pearson considered both the practice of the district and the Regulations for the Electrical Equipment of Buildings issued by the Institution of Electrical Engineers and also the relevant Regulations, the Electricity Supply Regulations, 1937. Although under S.27 of the schedule to the Electric Lighting (Clauses) Act 1899 as applied to the Board by the 1947 Electricity Act the Board were under an obligation to give a supply, the Regulations of 1937 are important as fixing responsibilities. The learned judge drew a distinction between other Regulations, namely: Reg. 25 (a) imposing responsibilities for electric lines and apparatus placed by them on the premises of a consumer; Reg. 26, the prevention of leakage; and Reg. 32 responsibilities on recommencement of supply where the wording of the section imposed an *obligation*, but Reg. 27 (a), the relevant regulation in the case, merely said "The undertakers shall not be compelled to commence or subject to the provisions of Reg. 32 to continue to give a supply to any consumer unless they are reasonably satisfied (1) that all conductors . . . . are constructed, installed and protected as to prevent danger so far as is reasonably practicable . . . . (2) That every district circuit is protected against excess energy by means of a suitable fusible cut out." This was interpreted to mean that the authority were not bound to give a supply unless they were satisfied, having regard no doubt to the fact that the owner had an option as to whom to employ in his contracting work.

A further point arose from this argument. If the electricity authority were prepared to make a supply and had received an instruction from the contractor "please test and inspect the same" were they responsible to a person injured or her representatives for supervising all defects? The Court held that the responsibility was too remote and that the Board could not be expected to undo and do again work already done by the electrical contractors. The Electricity Regulations 1937 had imposed certain responsibilities; the duty of care owed by the Board did not extend beyond that boundary. In the words of Pearson J. "It seems to me too much to say that the Board are responsible for what the occupier by himself and his contractors and agents may have done or omitted to do to his own chattels on his own premises."

Building Contract and Conditions of Tender

AN INTERESTING CASE for builders was *Moore v. Shawcross*, heard in the Queen's Bench Division before Mr. Justice Devlin on April 5 last. In the general conditions of tender drawn up by an architect there was a provision in clause 18 as follows: "The successful contractor, if any, may be required to enter into the usual form of agreement published by the Royal Institute of British Architects or other form of agreement required by the War Damage Commission." The successful tenderer was not required to enter into such a form of agreement. He sued the defendant for certain sums, one of the items being increase in prices on the basis of paragraph 25(I) (a) and (b) of the RIBA form of agreement.

The plaintiff claimed in the absence of any other contractual provisions that the contract was from the beginning subject to the terms of the RIBA form. A case was stated by the arbitrator and the learned judge held that the plaintiff failed. To put the construction suggested on the contract would be inconsistent with the provision as to the form of agreement required by the War Damage Commission. The action for increased prices therefore failed.

The Construction of Modern Abattoirs

A LECTURE AT THE ROYAL SANITARY INSTITUTE

THE Benjamin Ward Richardson Lecture, 1953, was presented at a meeting of the Royal Sanitary Institute held in London, last year, by MR. A. W. ANDERSON, OBE, BSc, Director of Slaughtering, Ministry of Food, on "The Siting, Construction and Management of Modern Abattoirs." We take the following extracts from Mr. Anderson's paper, on the constructional aspect. The speaker said:—

LAIRAGE ACCOMMODATION

The extent of the accommodation required for holding stock awaiting slaughter depends on a number of factors, not least of which is the source or sources from which the slaughterhouse will draw supplies. In the one extreme if all supplies are drawn from the local market on one day per week accommodation to hold at least a four days' kill must be provided, either in the form of covered lairages or grazing land for cattle and sheep. On the other hand, if the arrival of supplies will be spread over four to five days a week, a lairage capacity of a two days' kill may well suffice. Generally, the slaughterhouse drawing the greater part of its supplies from one market will be in the semi-urban districts where grazing is usually available. It is under these circumstances that every endeavour should be made to get grazing to keep building costs to a minimum.

Whatever grazing accommodation may be available, covered lairage to hold at least a full day's kill must be provided so that cattle and sheep can be rested overnight before slaughter. Additional covered lairage is necessary for calves and pigs, according to local circumstances. A little ingenuity in planning so that many of the pens can be used for different classes of stock will result in considerable economy, because the numbers of the different classes of stock to be held may vary even from week to week. Then there is the vexed question whether, and if so to what extent, provision should be made to tie up cattle. Facilities should be available to tie up cows and bulls, but to attempt to tie up the majority of other classes of fat cattle, which have never had a rope round their necks, is dangerous to man and beast. The provision of several small pens which can serve the dual purpose of isolating the odd animal suspected of disease and, when necessary, the sharp-horned bellicose individual, appears to be the best practical solution. The tie-up capacity should be determined, therefore, by the number of cows and bulls to be handled.

CATTLE SLAUGHTERHALL

The differences between line and booth dressing are so fundamental as to call for separate description.

Figure 1 shows the essential features of a single line for dressing cattle. It will be evident that it is comparatively easy to plan for the various organs and viscera to pass immediately on removal into adjacent accommodation without crossing the carcase.

The capacity of such a line depends generally on the length of the dressing-rails provided and the distance between the dropper and the dressing hoist. In what may be termed a normal line, the distance between the dropper and the dressing hoist should be about twelve feet, so that the carcase at half hoist to the dressing-rail will be quite clear of the next carcase dropped for flooring operations. A conveyor platform which allows two carcases at a time to be in position for the flooring operations has been tried out at Fareham experimental slaughterhouse with a view to speeding up the flooring operations. The experiment has been successful in increasing the potential output materially. On the smaller line it is possible to keep up a rate of twelve to fifteen cattle per hour, and this figure rises to twenty to twenty-four an hour when a conveyor is included.

If the smaller unit is more than is required it is quite possible to telescope the line to meet the position, when only sufficient operatives to do some four or five cattle per hour need be employed. Alternatively, if twenty to twenty-four cattle per hour would not meet requirements, it is a matter of opinion whether the solution lies in having several lines in a multi-floor building with chutes for the by-products to the floor below to avoid any crossing of carcases and inedible material, or in adopting the packing-house technique of having several beds for grounding operations all connecting up to a long dressing-rail, along which carcases are moved mechanically past the operatives, each responsible for one small operation only. The former solution seems better suited to British conditions, and there is the added attraction that, in a big centre with wholesalers operating on a substantial scale, each line could be regarded as a booth. Incidentally, under a scheme of moderate concentration, there would be comparatively few places where an output of twenty to twenty-four cattle per hour would not meet all demands.

Figure 2 is a very tentative sketch showing how booth dressing for cattle might be planned. It is unlikely that anyone designing a slaughterhall for booth dressing now would think of providing actual booths, but would rather concentrate on providing dressing areas set apart for individuals. The advantage of this line of approach is that it may make possible the communal use of some of the more expensive equipment. For example, one stunning-box with bleeding-rail and droppers could serve several dressing areas, as shown in the diagram. How far this can be carried must depend on the volume of stock to be handled by each individual and the amount of co-operation between individuals. When the number of cattle to be dressed in any one area will be small, one could safely calculate that one stunning-box with bleeding-rail and droppers could deliver a total of some fifteen cattle per hour to the dressing areas.

Some further saving might be achieved if the interests concerned are prepared to share a carcase-splitting saw at the point where the separate dressing-rails converge on the way to the cooling-room. On the line system a single saw can split some twenty-five carcases per hour, but it would be unsafe to calculate that a communal saw could cope with more than about fifteen per hour, and the number may well be less.

If it is decided that separate booths must be provided, then the amount of equipment required must be in direct ratio to the number of booths.

In a slaughterhouse designed for booth dressing it is impossible to eliminate altogether the crossing of edible and inedible material unless the slaughterhouse is designed on the multi-floor principle. In a single-floor building, provision of adequate facilities in the shape of suitable containers to move the materials from the point where they arise in the process of dressing to the appropriate accommodation for handling and storing

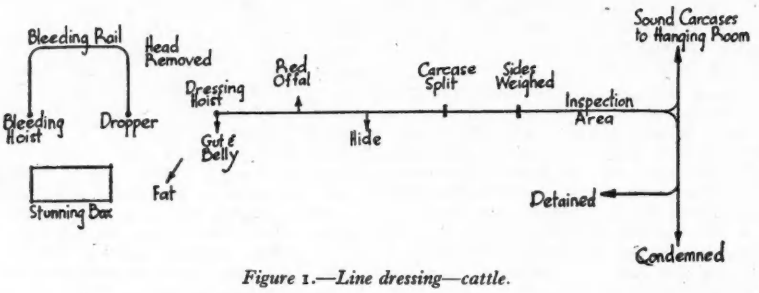

Figure 1.—Line dressing—cattle.

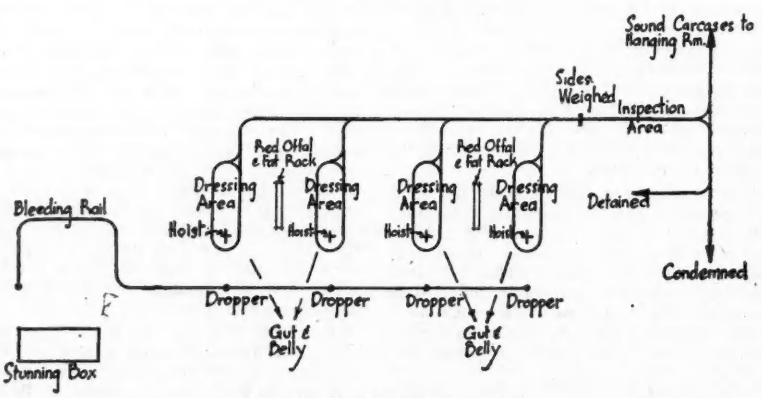

Figure 2.—Booth dressing—cattle.

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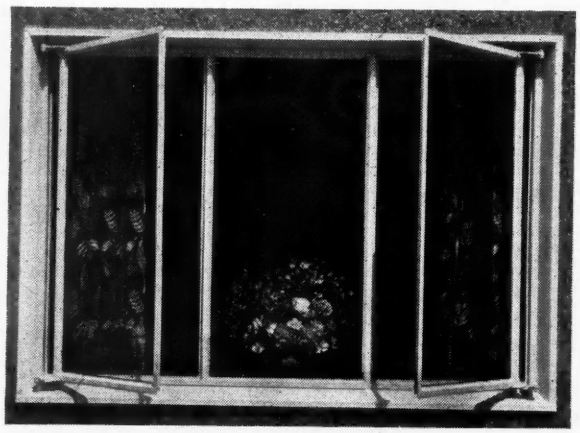

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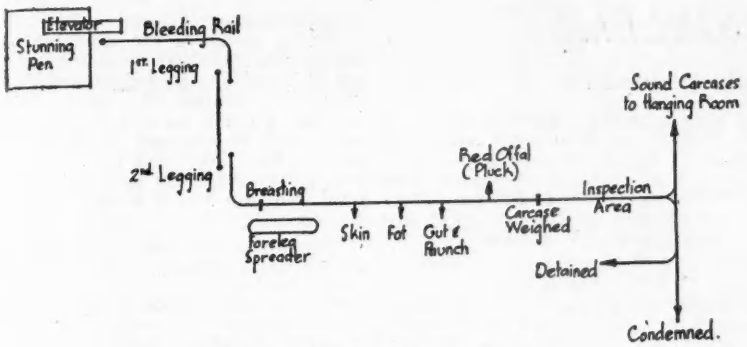


Figure 3.—Line dressing—sheep and calves.

may somewhat alleviate the crossing problem.

SHEEP AND CALF SLAUGHTERHALL

Figure 3 shows the essential features of a sheep and calf dressing-line. It will be evident that there can be little or no tie-up between this method of dressing and the more orthodox method of using cratches, which is inevitable in booth dressing except when individuals are operating on a large scale. The capacity of a sheep and calf line is determined by the number of men employed, which means the length of dressing-rail provided. With provision for ten to twelve men some sixty to seventy sheep an hour can be put through. There is no difficulty in telescoping the line for three or four men only.

In planning booth sheep dressing there are few limits to one's initiative. The requirements are simple; stunning pen, cratches for bleeding and dressing, which should be light and movable, and a rail or hooks to hang the carcases for the completion of dressing. It would be very difficult to devise a communal bleeding-rail to keep different dressing areas supplied as may be possible in the case of cattle, because the rate at which sheep and calves can be dressed would make it impossible to ensure that the individual got one of his own sheep or calves delivered to his own dressing area just when he was ready. This means there is little or no scope for keeping down costs by using any of the equipment on a communal basis, but, of course, the equipment required for sheep and calf dressing is comparatively cheap.

PIG SLAUGHTERHALL

There is a difference of opinion whether a building quite separate from the general slaughterhall should be provided for pig slaughtering and dressing. It is held that the steam inseparable from pig scalding and the liability of pork to take up taints make it desirable to handle pigs in separate premises. Generally, these difficulties can be overcome, with a consequent saving in building costs, by carefully planning the position of the pig-slaughtering area in relation to the general slaughterhall and by proper ventilation, assisted by the use of extractor fans. Anyone interested in a big unit can see our bacon factories, where up-to-date equipment, equal probably to anything in the world, is in use. If only a small unit is contemplated, the modest requirements of a stunning pen, a bleeding area and a scalding tub, with facilities for hoisting the carcases from the table to the dressing-rails, present no great difficulty in planning. The major problem is to decide when the inclusion of a dehairing machine becomes justified. I would hazard an opinion that if a fairly regular throughput of some two hundred pigs on two or three days a week is foreseen, the possibility of a dehairing machine should be considered, in consultation with the interests concerned. There is ample scope for our manufacturers to design a simplified dehairing machine to handle a smaller output economically.

CO-ORDINATION IN PLANNING

In addition to planning the general layout of the facilities for each class of stock it is necessary to bring these together as a planned whole. Costs may be greatly inflated unless very careful consideration is given to planning, so that the minimum of floor space is required and the by-products rooms are so placed that they are readily accessible for similar material arising from the different classes of stock. For example, the accommodation for gut should be so situated that the cattle, sheep and even pig gut can be brought in with the minimum handling and without crossing areas over which carcases pass.

COOLING AND CHILL ROOMS

It would be impossible to exaggerate the importance of adequate provision for holding meat and offals, for on this hinges to some extent the size of the lairages required, and even the size of the slaughtering units, apart altogether from any question of keeping the meat and offals in good condition. With adequate holding facilities, the kill can be spread over five, or even five and a half, days a week in emergency, instead of being concentrated into two or three. Given the facilities, it is cheaper to hold carcases over a week-end than to carry stock, not to mention the improved condition of the meat reaching the butchers' shops early in the week. All in all, the provision of adequate holding facilities gives greater freedom to rationalise the slaughtering time-table and elasticity in the volume of stock which can be handled than any one other single factor. The problem is to decide at what point the provision of chilling facilities as opposed to atmospheric cooling may become uneconomic.

Unless there are exceptional circumstances, if the throughput does not exceed some thirty cattle units per day, it would be uneconomic to provide artificial cooling with all the paraphernalia of insulated chill rooms. In these small units the solution seems to lie in devising a cooling-room to get the maximum benefit from a cold-air blower or blowers—hollow walls, tight-fitting windows and efficient ventilators which can be kept open during the winter months. The room should be rectangular rather than square in shape, with the hanging rails spaced some four feet apart. Three feet of running rail per beef carcase, or slightly more per star hook for sheep or pigs, will allow free movement of air.

There is room for research to establish how best to cool an inexpensive room sufficiently to enable meat to be held with safety over a long week-end.

In the larger centres, where chilling accommodation should be provided, it is necessary to have a pre-cooling space with good ventilation, assisted if necessary by extractor fans. This space need not be large, as it is necessary not so much from the cooling angle as to form a convenient pool to facilitate quick loading of the chill room. It will usually be sufficient if this space can hold about a two hours' kill with the rails spaced as described for the small cooling-room. The amount of chill space to be provided should not be less than can accommodate a two days' kill, and in some instances double that capacity might well be justified. In the chill room two and a half feet of running rail per beef carcase will be sufficient.

It is much better to have several small chill rooms than one big one and, if the decision is to have sufficient to hold a full two days' kill, two pairs of chill rooms should be provided, each room capable of holding a half day's kill.

The experts are certainly not unanimous on the best temperature at which the chill rooms should be maintained. The problem is to hold the meat in good condition without destroying the "bloom." I can only confirm that the temperature in the chill rooms at Guildford and Fareham experimental slaughterhouses is automatically controlled between 38 degrees and 49 degrees F., and, so far, there has been no trouble in holding meat over four or five days. It may well be that a temperature of 34 degrees to 36 degrees F. might give a greater margin of safety without the appearance of the meat deteriorating.

INEDIBLE BY-PRODUCTS

The question whether the inedible by-products should be processed in the curtilage of the premises or merely handled in such a way that they will arrive at a central processing plant without deterioration requires very careful consideration in each individual case, as the machinery required is expensive to buy and to operate and maintain. The deciding factors must be the amount of material available for processing, which is largely determined by the volume of the kill, more especially of cattle, the proximity of the nearest plant already operating and public health considerations.

The Boys Committee on Abattoir Design reached the conclusion that the average minimum slaughter of an establishment working on full factory principles should normally be three hundred and twenty beasts per week, with other classes of livestock in proportion. General experience since this report was issued in 1934 would indicate that these conclusions are not far off the mark, but it must be emphasised that so much must depend on the local circumstances, including whether facilities are already available within reasonable distance.

In certain circumstances the provision of a processing plant for some of the inedibles might be justified on public health grounds alone when the disposal of the material presents great difficulty.

ROOFING PROBLEMS

Some Answers to Builders' Inquiries

SOME of the inquiries received from members by the London Master Builders' Association on roofing matters which are likely to be of general interest, are answered in the Association's latest Technical Information Service Bulletin, No. 6, Roofing, the text of which is reproduced below by courtesy of the LMBA. It is emphasised that the answers given relate to the particular circumstances that have been raised with the Association's Technical Officer, and therefore the advice given may not necessarily apply to other cases.

THERMAL INSULATION

Tendencies in contemporary architectural design are reflected in the fact that a large proportion of roofing inquiries have been concerned with flat roofs and quite frequently with questions about thermal insulation.

Lightweight concrete screedings laid on structural roofs to form falls for drainage and also to provide comfortable conditions under the roof are in general use and foamed blast furnace slag has become one of the principal lightweight aggregates used. Foamed slag is a porous material produced by allowing a limited amount of water to come into contact with molten slag. For use as an aggregate foamed slag should comply with the requirements set out in BS 877:1939. One of the most satisfactory mixes for roof insulating screeding is composed of one part Portland cement to 9½ parts of foamed slag graded from ⅛ in. to 0 in. These are parts by volume and are equivalent to 112 lb. Portland cement to 12 cubic feet of foamed slag.

MIXING AND LAYING FOAMED SLAG SCREEDING

Foamed slag is a highly absorbent material and will hold a heavy intake of water. It should therefore be well wetted before the cement is added. Mix semi-dry for two to three minutes. Before the mixing time has elapsed a simple test for correct consistency can be made by taking a handful from the mixer and seeing if it adheres to the hand. If the water content is correct the hand should be slightly spotted with grout; it should not be generally dirty nor covered with blotches of cement.

In carrying out the work the roof should first be divided into bays not greater than 120 ft. super by profiles or 3-in. wide strips of foamed slag concrete using one part of cement to four parts of aggregate by volume. Lay the strips to correct levels and to the thickness of the finished screeding. By using a richer mix for these strips hardening takes place fairly quickly and a good solid base is provided on which to use the screed board. When the strips have hardened, tack on wood fillets equal in thickness to one-sixth of the finished screeding thickness. Spread the mass screed (1:9½ mix) and rule off to the top of the wood fillets. Remove the wood fillets and consolidate the mass down to the level of the profiles using a metal shod screed board. If this consolidation is properly carried out so that the the screeding is compacted to five-sixths of its depth at placing there should be no need to trowel the surface nor will the application of a topping coat of cement and sand be necessary.

When the waterproof roof covering is bitumen felt the screeded surface should be lightly sprayed with a bitumen emulsion, which, whilst not seriously delaying the drying out of the screeding, will prevent rain wetting it unduly. This will also serve as a primer and ensure proper adhesion of the bonding compound used for fixing the roofing felt. The bitumen emulsion should be of a type that will "break" within 10 minutes of application. It should be applied immediately after the screeding is laid, by an operator standing on a board laid on the surface and holding the spray nozzle about 18 in. above the top of the screeding so that a uniform coat of bitumen is given at a coverage of approximately 6 to 8 yards super per gallon.

Unfortunately this technique of putting an umbrella over the screeding is not suitable when asphalt is used for the waterproof covering because of the risk of the black sheathing felt underlay adhering to the bitumen emulsion coating which would then impair the purpose for which the underlay is provided.

Many of the inquiries received about lightweight concrete screedings covered with asphalt reflect the troubles that are experienced if such screedings are put down in bad weather when it is not possible for the screeding to dry out before the asphalters start work. In one case a foamed slag concrete screeding had become saturated with rain and while in this wet condition it had been covered with asphalt on a base of underlay felt. The structural roof consisted of precast concrete units and shortly after the building was occupied a brown liquid began to appear on the ceiling at the joints between the concrete units and around the electric light ceiling points. This brown liquid was moisture that had been bottled up in the screeding and being alkaline it had attacked the underlay felt. Although the asphalt had not been affected the ceiling decorations were seriously disfigured, and the brown staining continued to appear until the moisture in the screeding had dried out. Only then was it safe to redecorate the ceiling.

Possibly this trouble would not have developed if an isolating membrane such as waterproof paper had been put down on the screeding prior to the underlay felt, so that any moisture in the screeding would not come in direct contact with the felt.

CORK AS AN INSULATING MATERIAL

Experiences of this kind raise the question of whether insulating roof screedings made with lightweight aggregates of one or other of the types at present available provide the most satisfactory material for use on roofs where the final covering is asphalt and the work has to be carried out during the autumn or winter. What other insulating materials are available at a comparable cost that do not entail the risk of becoming waterlogged during rainy weather? Perhaps the most suitable alternative is the use of corkboard slabs, which can be obtained in many thicknesses. Even 1-in. thick corkboard slabs provide approximately equivalent thermal insulation to a 3-in. thickness of foamed slag concrete.

The normal sizes of corkboard slabs are 36 in. by 12 in. and 36 in. by 24 in. These slabs can be placed in position on the roof immediately prior to putting down the felt underlay to receive the asphalt covering, thereby avoiding the risk of exposure to the weather. Besides this very important consideration corkboard slabs are factory prepared and the thermal insulating qualities are therefore likely to be more consistent than is often the case with site-made lightweight concrete screedings which may not provide a uniform degree of insulation over the whole of the roof area.

UNDERLAYS

Some inquiries received on roofing questions have been concerned with the suitability of a particular material for the job in hand. In one such instance information was sought on the suitability of a self-finished roofing felt surfaced with talc or mica, as an underlay to a sheet lead covering for a flat timber roof.

This type of material is likely to function satisfactorily in that it will minimise irregularities in the surface of the boarding and allow free movement of the lead due to temperature changes. Open textured flax or hair felts impregnated with fluxed coal tar pitch are perhaps regarded as providing the most efficient underlays. Where the base is tongued and grooved boarding, with nail heads driven below the surface, stout waterproof paper is often an acceptable alternative. Underlays of all types for metal-covered flat roofs are best put down with the fall of the roof and the joints butted under the rolls and drips.

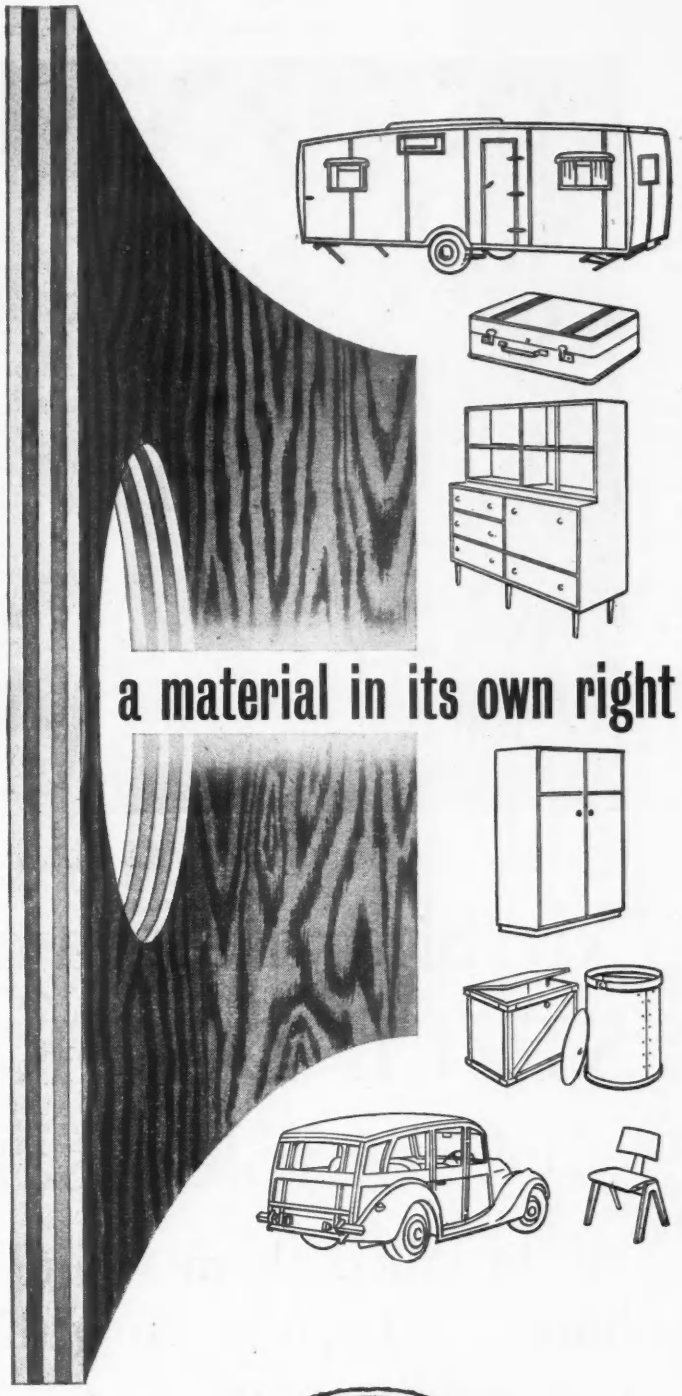
REPAIRS TO ASPHALT

In another case information was sought on the suitability of a particular bituminous product for application to an asphalt roof which was cracked and not completely watertight.

Any surface dressing for application to asphalt should be of a bituminous and not of a tar or other type and therefore the product concerned was unlikely to cause further damage to the asphalt, but a bitumen emulsion by itself is only robust enough to seal very fine cracks and two or three coats may be required.

In some cases it is useful to embed a strip of cotton or hessian fabric in the first coat whilst it is still tacky and then apply second and third coats of emulsion on successive days; the durability of the repair will be improved if the final coat is dusted with fine sand. For larger cracks it is preferable to use a heavy bituminous paste and there are many suitable compositions for cold application either by brush or by trowel available on the market; some may need gentle warming before use. But repairs of this description are at best only makeshift; they are not as good as patches of asphalt inserted by skilled operatives.

One inquirer wished to know whether



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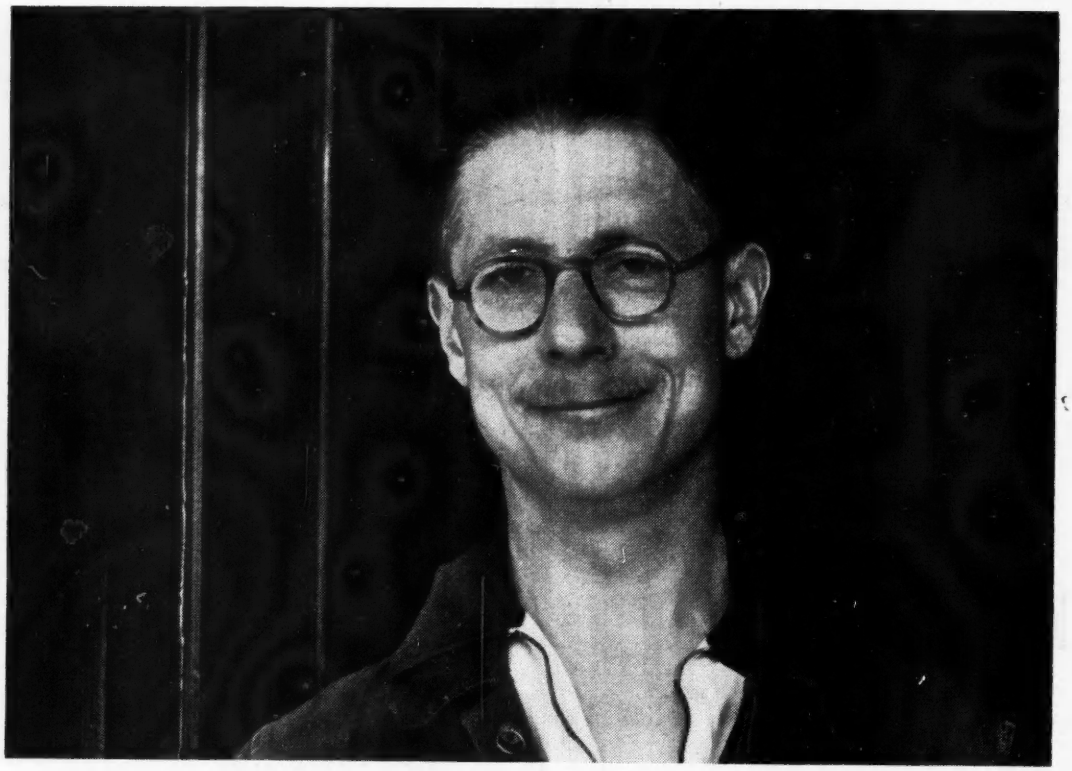

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two-coat asphalt could be laid over an existing leaky asphalt finish. Although this is an unusual procedure, it is a perfectly feasible one provided that an underfelt is first laid on the old asphalt surface. It is likely to be necessary to renew existing flashings and skirtings. Whilst this procedure is suitable for use on a concrete roof it should be used with caution when dealing with a timber roof. Here it is important first to take the opportunity of inspecting the roof structure to ascertain if any dry rot is present. The ventilation of timber flat roofs, particularly where there is a plaster ceiling on the underside, is difficult and rarely attempted and consequently the timbers may be in a bad or even dangerous condition by the time, after much patching, it is decided to lay a new asphalt topping.

IMPORTED CONTINENTAL SLATES

Whilst a high proportion of technical inquiries on roofing matters have been concerned with flat roofs many questions have also been raised about pitched roofs. In one case a builder was asked to repair a roof covered a few years previously with imported Continental slates which had become absorbent and were flaking. He realised that to make a lasting and satisfactory job the whole roof should be stripped and reslated, but owing to the high cost involved he wished to know whether further deterioration of the slates could be arrested and the roof made watertight by applying a waterproofing liquid.

It was not possible to recommend any simple remedy. When the body of such slates is reasonably sound and affected only by surface blisters and slight scaling of the laminations an inexpensive treatment that will help to keep the roof covering intact is a good coating of tinted cement paint or bituminous emulsion. If, however, deterioration has reached the advanced stage and the slates are breaking from the nail holes and sliding out of position and their exposed edges have developed the appearance of a pack of cards, the only surface treatment likely to have any value is a bituminous adhesive covered with hessian or canvas and finished with further bituminous dressings with a dusting of sand on the final coat. However, a treatment of this kind is hardly worth considering because it would be little cheaper than re-slating. Even if the slates were worth preserving neither of the paint treatments could be expected to have an effective life of more than a few years, and in any event it would be difficult to do the job without causing further damage to the slates. Re-slating is likely to prove the cheapest remedy in the long run when it should be made certain that the new slates, whether they are British or Continental, meet the requirements of B.S. 680.1944.

Importers of roofing slates of good quality are more than ready to show reports of tests carried out in accordance with the requirements of this British Standard and any slates for which such a report is not produced should be regarded as suspect. When slates which do not conform to this BS are used in a town they will invariably need replacement in a few years and even in the more favourable conditions of a country district long service cannot be expected of them.

A prospective user can easily satisfy himself whether any particular slate merits his consideration by immersing a sample in a solution of sulphuric acid. Acid of a suitable strength can be prepared by adding accumulator acid to an equal volume of water; a reasonably good slate will stand in acid of this strength for several days without ill effect. A type of roofing slate that decomposes within a day or two when tested in this way is unlikely to give satisfaction in use even in country districts.

CLAY ROOFING TILES

Questions about tiles have been comparatively few. One inquirer wished to know whether any serious trouble was likely to develop because he had found small nodules of a greyish white material bursting out of the surface of clay roofing tiles. An examination of the tiles showed that this disturbance was caused by the presence of particles of chalk in the clay from which the tiles were made. These particles had been converted into quicklime when the tiles were burnt and subsequent slaking of the nodules on exposure to the weather had given cause for alarm. As a general rule it is safer to reject a delivery of clay tiles which show many greyish-white particles either on the surface or in the body of the tile. Once the tiles have been laid on the roof, however, the problem is to assess whether serious trouble such as spalling and cracking of the tiles is likely to develop or whether nothing more annoying will occur than surface blemishes. The answer is not always simple because while the defects may occur quite soon after the tiles are in position they may well be delayed for many months. An examination of the roof in question revealed that the amount of potentially dangerous material in the tiles was unlikely to be sufficient to justify them being disturbed and that the situation did not seem to call for anything more drastic than a touch of colour wash on the disrupted parts of the tiles which had a different appearance from the remainder.

Invariably troubles cost money and frequently they lead to much argument between the parties concerned; it is seldom possible to suggest a satisfactory way of dealing with the difficulty, which is as simple as a splash of matching colour. This is illustrated by another inquiry concerned with clay tiles on the roof of a house built about 25 years ago. The first sign of trouble was two or three tiles lodged in the eaves gutter and when the builder gathered them up to refix or renew them he found that they were partially covered with a whitish powder and the projecting nibs had almost completely disappeared.

A examination of these tiles showed that the powder was efflorescence of soluble salts similar in character to that which frequently forms on the face of newly built brickwork and normally disappears of its own accord when the wall dries out. The presence of soluble salts may however be more serious in thin clay roofing tiles than in brickwork because a roof is so much more exposed to wet conditions than the walls below.

When water is absorbed into the body of a tile from its exposed margin the moisture takes into solution any soluble salts that may be present. The solution moves to the underside of the tile by gravity and also to the head of the tile by capillarity and as the tile dries out after rain the salts crystallise in these areas. No treatment can be applied to prevent this happening and eventually the areas where the salts have been deposited get eaten away and as the projecting nibs disappear the unnailed tiles slip out of place.

The extent to which the trouble is occurring is not usually visible from the roof space and unless a good number of tiles have become displaced it is not generally worth while disturbing the boarding or roofing felt or even lifting other tiles to make an examination because, as in the case of the deteriorating slates considered earlier, no satisfactory remedial measures can be employed. If only a few tiles are obviously affected they may be replaced individually by new ones; otherwise the roof will need retiling.

MOSS AND OTHER VEGETATION ON ROOFS

This review of some of the inquiries about sloping roofs may fittingly end with two that are concerned with appearance rather than construction. One was for treatments for killing or controlling the growth of moss and lichen on roofing tiles and the other a request from a builder for means of toning down almost pink-coloured tiles on a cottage whose owner found them an eyesore and who wished to promote the growth of vegetation on the roof.

To kill or control the growth of moss and lichen on roofing tiles a solution of copper salts or magnesium or zinc silicofluoride is likely to be effective. The use of these substances involves no serious risk to the operatives applying them, but care should, of course, be taken to avoid prolonged contact between the solutions and the skin.

The first of these toxic washes is prepared with ¼ oz. of copper carbonate and 3 oz. of a solution of .880 ammonia in 2½ gallons of water; the silicofluoride washes are prepared by dissolving 1 lb. of zinc or magnesium silicofluoride in 2½ gallons of water. There are also ready-to-use proprietary preparations available on the market for those not wishing to mix their own. Unless the growth is very well established one application should be sufficient to clear the existing vegetation. Where the growth is of long standing it may reappear during the following year and further treatment may be necessary.

The effect of these washes is to kill the growth which will turn brown and slowly disintegrate; after it has been killed it can be brushed away if it is desired to clear the roof more quickly.

Such treatments alone may, however, last only two or three years because they tend to lose their efficacy as they become washed out of the tiles during wet weather, but if in addition to applying the toxic solution a copper flashing is provided at the ridge, supplemented on very long slopes by stretching copper wire at intervals along the length of the slope, the effect of rain will be to dissolve out copper salts which will drain down the roof and continue to inhibit the growth of vegetation.

The other inquiry about treatment to

have the reverse effect was answered by giving the traditional recipe for one of the most successful methods of promoting a natural growth of vegetation, the application of cow dung mixed with water to a workable consistency. This treatment is best carried out in the early spring by first damping down the roof with water and following up with a slurry of cow dung applied with a long-handled stiff broom. This gives an immediate darkening effect and provides the organic material favourable for the growth of vegetation. There are, of course, many factors which influence the success of a homely treatment of this kind, but it is one that has been found effective on many roofs and under favourable conditions lichen and moss should begin to appear within a few months. If the results following the first application are not all that was hoped for it is usually worth while repeating the process in the reasonable expectation that the outcome will be more successful. In this particular instance some care was said to have been taken in the selection of the source of material used for the coating; it was found that the treatment had vastly improved the colour of the roof and a lush growth of vegetation was awaited with confidence.

ROOF LIGHTS

Many differing types of work fall to be undertaken by builders dealing with maintenance and an inquiry was received for information on the best way of cleaning an accumulation of grime and weathered film from glass roof lights on a building adjacent to railway sidings.

Dirt in this concentrated form is seldom encountered on windows which are usually washed to some extent by rain even if not specifically cleaned, but the problem can become serious on roof lights which tend to collect dirt readily and are often difficult of access for cleaning. Water will not remove grease and other stains and for these some special solvent is necessary.

Unfortunately, much of the dirt that accumulates on roof lights contains small particles of abrasive material, and as the dirt film is also porous it is able to hold water in contact with the glass surface. This water, in turn, becomes alkaline and more strongly corrosive, and the resultant roughening of the glass sometimes allows the dirt to become so thoroughly ingrained that no ordinary cleaning process is effective.

When glass in this very dirty condition has to be cleaned it is necessary to remove the external layer of dirt either by scouring the glass with steel wool and one of the proprietary cleansing powders mixed to a paste with water or by a less laborious treatment with dilute acid. Spirits of salts will in some cases remove all dirt in a few seconds, but if the surface of the glass has been attacked the sheet is left in a filmy condition.

A more satisfactory way of removing both dirt and the weathered film is to use hydrofluoric acid which even in a very low strength is able to decompose and dissolve the silicates of which glass is chiefly composed. If used in a 1 per cent. solution it will clean the dirtiest of glass in a few seconds, leaving a brilliant smooth surface. In effect, the glass is "acid polished."

Whenever acid treatments are used it is essential that the solution should not be in prolonged contact with metal glazing bars and gutters. Very great care should therefore be taken in applying the acid to the glass and immediately the action is complete the roof should be thoroughly washed down with water. Hydrofluoric acid is highly dangerous to apply with unprotected hands and it is therefore most important that those using the acid should wear rubber gloves. In no circumstances should this precaution be neglected.

The findings of research work on many aspects of roofing, some of which have been considered in this Bulletin are contained in the publications listed below and a close study of them is recommended. Copies are obtainable from the LMBA Headquarters, 47, Bedford-square, London, WC1, or from Her Majesty's Stationery Office.

Building Research Station Digests (price 3d. each).

No. 11.—Damp proof courses in Parapet Walls.
No. 12.—The Design of Flat Concrete Roofs in Relation to Thermal Effects.
No. 32.—Concrete made with Lightweight Aggregate.
No. 43.—Coloured Treatments for Bituminous Surfaces.
No. 45.—The Durability of Roofing Slates.
No. 47.—The Control of Lichens, Moulds and Similar Growths on Building Materials.

Previous Bulletins issued by the LMBA.

No. 1.—Plastering.
No. 2.—Floor Finishes.
No. 3.—Problems arising from Dampness.
No. 4.—External Decorating Problems.
No. 5.—First Miscellany.

FUEL ASH IN BRICKMAKING

Possibilities of Economic Use

[*From a Correspondent*]

EXPERIMENTS initiated at Hams Hall power station, Birmingham, have proved that satisfactory facing as well as common bricks can be manufactured with a content of 85 per cent. of the fine powdery pulverised fuel ash, the disposal of which is a major problem in modern electricity generation, and 15 per cent. of clay. The British Electricity Authority is now considering whether to establish at Hams Hall a pilot plant for brick production, and plans for this have been prepared.

BEA is also in close touch with the brick industry with a view to private enterprise exploitation of the ash; in this connection it is understood that there is no special wish by BEA to undertake large-scale brick production; they merely wish to dispose of the ash, of which Hams Hall alone produces 1,000 tons a day. The experiments were conducted with the co-operation of two private firms—the Knowle Brick Works, of Bentley Heath, and Jackson's Brick Works, at Bickenhill.

If brickmakers could draw substantially on the ash dumps the purpose of the experiments would be served. The industry is interested, but for private enterprise, as for the BEA, the future depends on the economics of brick-making. The new process would best suit an area where bricks could be made at or near the power station for use mainly in the neighbourhood.

Further experiments are taking place at Hams Hall for the use of ash in making concrete. Already a limited use of ash in concrete is being made by a firm near a northern power station. In general, it is felt that the use of ash for bricks and concrete is a long-term matter, and large-scale production is not expected in the near future.

SMOKE POLLUTION

West Riding Campaign

A CONCERTED campaign to deal with the problem of domestic smoke pollution is to be launched in the West Riding of Yorkshire this autumn. Forty-four County and Municipal authorities are concerned, members of the West Riding Regional Smoke Abatement Committee, under whose auspices, jointly with the Yorkshire Smoke Abatement Society, the campaign is being held. The Solid Smokeless Fuels Federation, 74, Grosvenor-street, W1, are providing full support in organising the programme, which will extend for over a month from the middle of September.

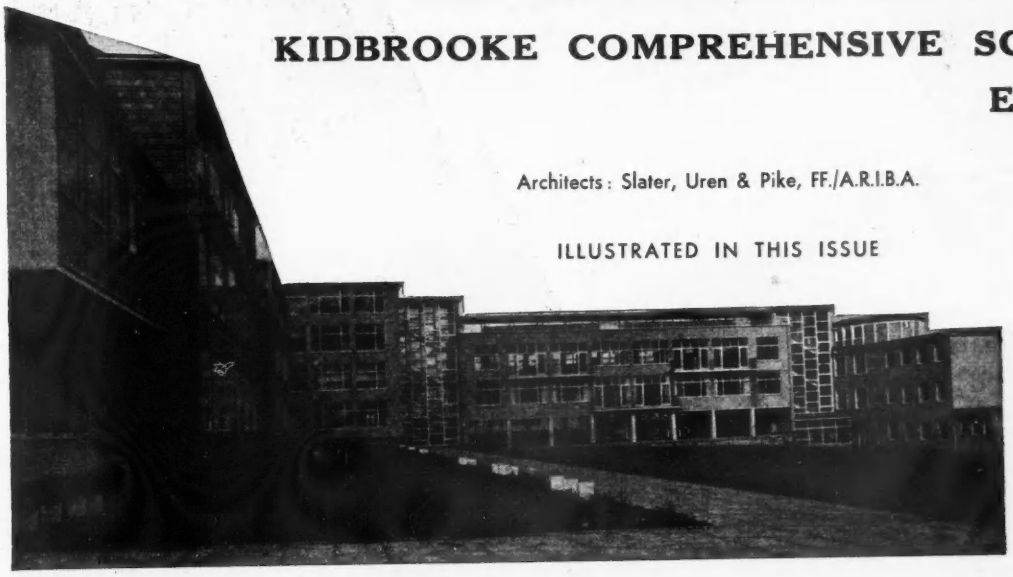
The campaign will open with a meeting at Leeds on September 14 at which representatives of all public bodies in the West Riding concerned with health, housing, etc., will consider and discuss means whereby the problem of smoke pollution can be dealt with under the particular conditions prevailing in the area. Local meetings will be held subsequently throughout the Riding, with film shows and talks by technologists working on the various problems involved. A mobile exhibition will be provided by the Solid Smokeless Fuels Federation, with demonstrators, showing modern domestic appliances for heating, cooking and hot water, designed to burn solid fuels which are smokeless and sootless. This exhibition will tour the leading towns of the West Riding to tie-up with the local meetings and discussion groups. The campaign will be supported by publicity through posters and advertisements in the newspaper Press.

It is recognised that the West Riding of Yorkshire is one of the most difficult areas to deal with. It is a coal-producing area, with a deep-rooted tradition for using coal for all domestic heating services, including cooking. Up to three tons of soot is estimated to fall every day on each square mile of its towns, causing incalculable damage to health, food crops and property. Evidence of this was provided by experiments made some years ago at Leeds. Five beds of cabbages were planted in the autumn. In one bed, three miles north of the town, eight out of nine survived the winter; in another, two miles north, two out of nine survived; one mile north, three survived till Christmas but were dead by February; in the centre of the town, they all died by the end of November; and in the industrial area of Hunslet, they were all dead by the end of October. As for the damage to property, sulphuric acid in the atmosphere has eaten holes nine inches deep, in the fabric of York Minster.

The responsible authorities are already aware of the harmful effects of smoke pollution. The campaign is intended to bring it home to the general public, and to demonstrate that burning solid smokeless fuels in modern appliances will abolish domestic smoke and provide better and more efficient heat services in the home. The question of creating smokeless zones, by successive stages as in the case of Manchester, or in new housing estates where a condition of tenancy is that solid smokeless fuels only are used, will also be explained and discussed..

IPSWICH DEVELOPMENT PLAN

The Minister of Housing and Local Government has approved with modifications the development plan for Ipswich CB.



KIDBROOKE COMPREHENSIVE SCHOOL, ELTHAM

Architects: Slater, Uren & Pike, FF./A.R.I.B.A.

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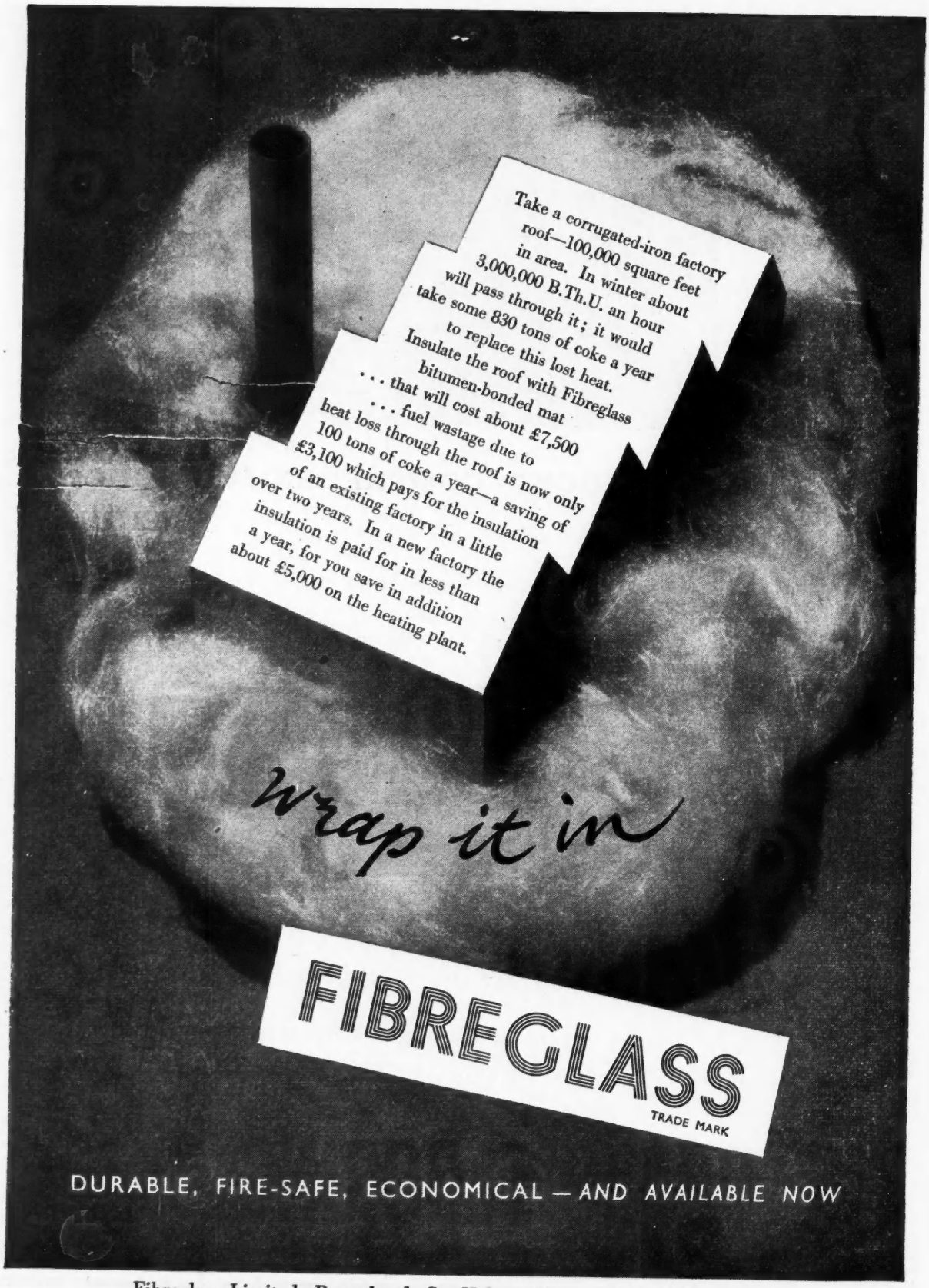
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NEW SCHOOLS FOR BIRMINGHAM

£2½m. Building Programme Approved

THE Ministry of Education has approved a £2,500,000 Birmingham building programme for 1955-56, which includes 24 new schools or schools extensions. There are seven more in an approved reserve programme, and three have been added to the present year's list.

These plans mark a turning point in the city's post-war building drive, writes a correspondent. They will open the final phase of the battle to build new schools fast enough to keep pace with need.

Then Birmingham hopes to be able to turn to the task of replacing or improving the old worn-out schools in the inner areas, where work is at present limited.

Thirteen secondary schools are to be built or extended under the programme for the year beginning next April and under the reserve programme are included two new technical schools for girls and one for boys.

It is hoped to finish these, and others started earlier, in time to help accommodate the 77,500 scholars who will need places in Birmingham secondary schools during the 1958-59 peak year—16,500 more than now.

Eight new primary schools will help keep pace with the needs of younger children on new housing estates. Six nursery units (two of them additions to this year's programme) are to be put up, to be used at first for older children. In the same way a further education centre, to be built at Harborne Hill, will be the home, temporarily, of 240 secondary school scholars. The Harborne Hill centre will be the first of the adult wings which it is intended to add ultimately to many of the city's new secondary schools.

The new technical schools for girls will be at Billesley and at Hagley Road. (A boy's technical school at Hagley Road is in the present year's programme.) The one at Billesley will be on a site where a girl's grammar school and modern school are now being built. It will cost about £170,000 and will share a gymnasium and dining-rooms with the other two schools. The Hagley Road schools will cost in the region of £200,000.

A boy's technical school to be built at Marsh Hill, is in the reserve programme. This, too, will cost about £200,000. Three Roman Catholic secondary schools are to be built under the two programmes—to serve the City Road, Northfield, and Handsworth areas. Another Roman Catholic modern school—at Acocks Green—has been added to this year's list.

Secondary modern schools are to be started during 1955-56 at Masshouse Lane, King's Norton (boys and girls), Church Lane, Handsworth (boys), and one for boys and girls near Bromford Primary School.

The George Street West school for the physically handicapped is to be adapted as an extension to the adjoining Camden Street girl's modern school, when the school for the physically handicapped moves to new premises now being built at Wyrley Birch.

Moor End mixed modern school (Erdington), Vicarage Road girls' modern school (Aston) and Four Dwellings boys' modern school (Quinton) are to be extended. So is Wheeler's Lane boy's modern school (King's Heath) under the reserve programme.

Primary schools are to be built at Northfield (Hilary Grove juniors), Harborne (Welsh House Farm infants and juniors), Erdington (Sutton Road infants and juniors), Shenley Fields (infants), Sparkbrook (Christ Church, Church of England, infants and juniors and Tile Cross (Lea Hall Roman Catholic infants and juniors).

Other junior schools will go up at Tessall Lane, Northfield, and at Shenley Fields, under the reserve programme.

A school for educationally sub-normal children is to be built at Northfield. It will be the first of a group of three special schools on a site at Bell Holloway.

The new nursery units (temporarily schools for the older children) will be at Rednal Hill; Main Street, Sparkbrook; Tessall Lane area, Northfield; Benacre Street; Broadmeadow Lane, King's Norton; and Firsby Road, Harborne.

About half the new schools will be built by non-traditional methods—part of Birmingham's drive to get new schools more quickly.

KIDBROOKE SCHOOL

Additional List of Sub-contractors

THE following firms were associated with the scheme for Kidbrooke Comprehensive School, which is illustrated on pages 289-298 of this issue:—

Mechanical services—suppliers:—Boilers and calorifiers, Hartley and Sugden, Ltd.; oil-burning equipment, Combustions, Ltd.; instruments K.D.G. Instruments, Ltd., Cambridge Instrument Co., Ltd., Electroflo Meters Co., Ltd.; instrument panel, Hartons; controls, Rheostatic Co., Ltd.;

Circulating pumps, Holden and Brooke, Ltd.; radiant heating panels, Comyn Ching, Ltd.; warm air circulators, Copperad, Ltd.; radiators, Gulf Radiator Co., Ltd.; lagging, Bernard Hastie and Co., Ltd.; blenders, Charles Winn and Co., Ltd.; air filters, Fibreglass, Ltd.; heater batteries and fans, Matthews and Yates, Ltd.; ductwork, Ozonair, Ltd.; cold water storage tank, Braithwaite and Co. (Engineers), Ltd.

Electrical services.—suppliers:—(Lighting fittings) classrooms and external, Hume Atkins and Co., Ltd.; practical rooms and assembly hall, Courtney Pope (Electrical), Ltd.; corridors, S.L.R. Electric, Ltd., stage and dimming, Strand Electric and Eingineering Co., Ltd.

(Power and distribution) main switchgear, Brush Electrical and Engineering Co., Ltd.; distribution, general, Bill Switchgear, Ltd.; socket outlets, Walsall Conduits, Ltd.; switches, 5 amp., etc., J. A. Crabtree and Co., Ltd.; starters for pumps, fans, etc., Electrical Apparatus Co., Ltd.; V.R.I. cables, Armourduct, Ltd.; P.I.A.I.C, Johnson, Phillips and Co., Ltd.

(Sound system) Specialist sub-contractor to Holliday, Hall and Stinson, Ltd., Sound Diffusion, Ltd.; loudspeakers, Reproducers and Amplifiers, Ltd., and the General Electric Co., Ltd.; fire alarm pushes, Gent and Co., Ltd.

(Impulse Clock System) clocks, including those of special design, Gent and Co., Ltd. (Telephones) GPO and Reliance Telephone Co., Ltd.

Furniture and equipment manufacturers (LCC designs).—Nathan Agran, Ltd., printing table, pottery benches, clay bins, needlework cutting-out tables; James Clark and Eaton, Ltd., mirrors; Co-operative Wholesale Society, Ltd, medical inspection couch; W. Danemann and Co., Ltd., upright pianos; T. Glenister, Ltd., marking and pupils' common room tables, waiter sideboards, serving trolley, teachers' classroom tables, tracing tables, display cases, working tables, plan chests, dual kitchen tables, enamel top table, office chairs.

Gymnastic Equipment Engineering Co., Ltd., balancing forms, beating boards, jumping stands; H. Hunt and Son, Ltd., beating boards; Lord Roberts Memorial Workshops, medical cupboards; C. W. Maggs (Melksham), Ltd., coir gym mats; Mann Egerton and Co., Ltd., dual practical workroom tables, housecraft kneehole tables; Metalliform, Ltd., tubular steel display stands and boards; Neeta, Ltd., tubular steel chairs for hall, etc., tubular steel trolleys; Norbury Joinery and Cabinet Works, Ltd., chalkboard easels; Olympic Gymnasium Co., Ltd., climbing ropes, single span double beams, vaulting horses, vaulting boxes, quilted gym mattresses.

Papworth Industries, library tables, librarians' desks, medium classroom cupboards, teachers' tables, low study room cupboards, needlework tables with wooden tops, hinged chalkboards; Procanta Manufacturing Co., Ltd., glass fronted bookcase; Viner and Marsh, Ltd., modelling stands; Wrinch and Sons, Ltd., science and art room stools, geography and history pupils' tables, folding skirt boards, housecraft stools, glass top tables, needlework tables with plastic tops, bookcases (Evening Institute); dual catering tables, lino top tables, office tables.

(Commercial designs).—Adam and Lane and Neeve, Ltd., drugget; Barlock Typewriting Co., Ltd., typewriters: William Birch and Son, Ltd., head teacher's armchair; Bluebird Portable Typewriters, typewriters; British Olivetti, typewriters; British Sewing Machines, Ltd., sewing machines; British Typewriters, Ltd., typewriters; Campbell Engineering Co., Ltd., ironing boards (trade type); R. M. Catterson Smith, Ltd., pottery kiln; Clarke and Smith Mfg. Co., Ltd., projector stands and electric gramophones; Co-operative Wholesale Society, Ltd., typewriter chairs.

W. Danemann and Co., Ltd., concert grand piano; Dare-Inglis Products, Ltd., tubular steel hat and coat stands; Decca Record Co., Ltd., gramophones; Durantes, Ltd., rugs; Durrant and Son, Ltd., card index cabinets; Educational Supply Association, Ltd., pupils' tables and chairs (Lamstak); E.M.I. Sales and Service, Ltd., disc recorder; S. Epstein, Ltd., typists' tables; W. G. Evans and Sons, Ltd., low staff tables; Everwear Candlewick, Ltd., bedspreads; Flatters and Garnett, Ltd., micro-projector; Furniture Industries, Ltd., chairs for library, staffroom, medical suite and administration, etc.

G.B. Equipments, Ltd., cine projectors; Gestetner, Ltd., duplicator; Gordon Russell, Ltd., double pedestal desks and chairs; A. Goslett and Co., Ltd., bathroom cabinets; G. M. Hammer and Co., Ltd., stacking tables in dining rooms; Heals (Contractors), Ltd., furniture for model flats; Hobart Manufacturing Co., Ltd., food mixer and potato peeler; H. K. Furniture, Ltd., staff fireside chairs; Imperial Typewriting Co., Ltd., typewriters; Kennett and Lindsell, Ltd., dress stands; Kingfisher, Ltd., Dropwell typewriting tables, stacking rest beds; Landor Furnishings, divan covers; Legg (Industries), Ltd., low voltage units; Liberty and Co., Ltd., rugs; Libraco, Ltd., steel wall shelving for history and geography rooms, periodical racks.

Milners Safe Co., Ltd., two drawer steel filing cabinets; Horatio Myer and Co., Ltd., divan beds; Masons (Canterbury), Ltd., rugs; New Equipment, Ltd., tubular steel stacking stools; Norwood Steel Equipment (London), Ltd., staff wardrobe lockers (steel); Olympic Gymnasium Co., Ltd., "Cave" gymnastic apparatus; Papworth Industries, draw-lead dining room tables; G. Pearson and Co., Ltd., micro-projectors; George Philip and Son, Ltd., hanging geography globes; Potters Equipment, Ltd., potters wheels; A. Reason and Sons, Ltd., easy chairs in model flats; Remington Typewriters, typewriters; Roneo, Ltd., duplicator; Ross Ensign, Ltd., epidiascope; Russell Bros. (Paddington), Ltd., art room easels/tables.

Sankey Sheldon, Ltd., four drawer steel filing cabinets; Savage and Parsons, Ltd., filmstrip projectors; Siegal and Stockman, Ltd., dress stands; Singer Sewing Machine Co., Ltd., sewing machines; Sir Isaac Pitman and Sons, Ltd., typewriting records; Sterling Typewriter Co., Ltd., typewriters; Frederick Tibbenham, Ltd., furniture for model flat; Tidmarsh and Son, Ltd., venetian sunblind and blackout blinds; Alec Tiranti, Ltd., modelling stands (table model); Underwood Typewriting Co., Ltd., typewriters; Willcox and Gibbs Sewing Machine Co., sewing machines; S. G. Williams and Co., Ltd., making up and hanging curtains and blackout curtains; Wilson and Garden, Ltd., "Unique" roller chalkboards.

PLANNING APPLICATIONS

Builders Fined for Non-submission

THE FIRM OF J. A. Procter and Co., builders, of Torquay, was charged on August 9 at Torquay with three building offences in connection with the erection of sleeping chalets in the grounds of a Torquay house. An assistant building inspector, Mr. R. Stevens, said that on May 3 he visited Fircroft, Bronshill-road, and found some carpenters completing the erection of a single-storeyed building, although no application for permission to carry out this work had been received by his department. The defence put forward by Mr. G. Procter, a partner of the building firm, was that his firm was unaware that permission was necessary in connection with that sort of structure, but that since they had learned they were wrong, they had offered every co-operation with the local planning authority.

The magistrates imposed a fine of £1 for not submitting plans of the buildings, a fine of 10s. for not giving notice of intention to build, and 10s. for not giving notice of the date building commenced, the chairman remarking that builders must know the by-laws.

THE PROPERTIES OF TIN

A completely revised edition of "The Properties of Tin" has now been issued by the Tin Research Institute. The original compilation was published by the Institute in 1934 and was reprinted in 1937; for some years it has been out of print awaiting full revision. Price 2s. 6d., copies are available from the Institute at Fraser-road, Perivale, Greenford, Middlesex.

BUILDING EDUCATION IN LONDON

Hammersmith School of Building

THE Hammersmith School of Building and Arts and Crafts, Lime-grove, W12, has issued prospectuses containing information on the courses available in the Department of Building Trades, the Department of Arts and Crafts and the Department of Architecture, Building, Structural Engineering and Surveying.

The Department of Building Trades provides day courses and evening classes in the theory and practice of building crafts leading to the examinations of the City and Guilds of London Institute. Additional subjects are also given enabling successful students to obtain Full Technological Certificates of the City and Guilds of London Institute. There are also opportunities for advanced study in craft and craftsmanship beyond the final City and Guilds stage.

The Department of Architecture, Building, Structural Engineering and Surveying provides full-time and part-time day and evening courses for students of the professional and contracting sides of the building industry. Hammersmith is regarded as a centre of education for the examinations of the RIBA, the Royal Institution of Chartered Surveyors, the Institution of Structural Engineers and the Institute of Builders. It is one of the few schools in Britain which conducts courses for both the Ordinary and the Higher National Diplomas in Building. It is a listed school of the RIBA.

The Department of Arts and Crafts provides courses for students wishing to make a career in the fine arts, interior design and industrial design. Courses are provided for the Ministry of Education's Intermediate Certificate in Arts and Crafts and the National Diploma in Design.

Prospectuses covering the separate departments of the Hammersmith School of Building and Arts and Crafts are available free of charge on application to the Principal.

Brixton School of Building

DETAILS OF part-time day and evening courses in architecture and surveying, building and structural engineering provided at the Brixton School of Building, Ferndale-road, SW4, have also been published in a prospectus for the session 1954-55.

Courses and classes are available for young men with experience in the building industry; adults wishing to specialise in the advanced sections of their vocation; young men engaged in public works departments; and pupils preparing to qualify as architects, surveyors, structural engineers, reinforced concrete engineers or sanitary engineers.

In addition to fitting the student for the practical duties of the building industry courses are also provided leading to the recognised examinations of independent bodies, including the Institute of Builders, the Royal Institute of British Architects, the Institution of Structural Engineers and the City and Guilds of London Institute.

Copies of the prospectus may be obtained free of charge on application to the Principal.

South-East London Technical College

THE South-East London Technical College, Lewisham-way, SE4, has issued a prospectus giving details of day and evening courses in the Department of Building and Structural Engineering.

Students wishing to be admitted to evening classes must have either passed the general certificate of education examination or its equivalent; or taken a three-year course at a secondary (technical) school; or satisfied the Principal that the proposed course of study best meets his or her educational needs. Admission to the practical trade classes is, as a rule, restricted to those engaged in the trade.

Among the courses provided by the Department of Building are courses leading to the National Certificate in Building, the examinations of the Institute of Builders and the examinations of the City and Guilds of London Institute.

Copies of the prospectus may be obtained free of charge on application to the Principal.

PURCHASE TAX EXEMPTION

Passenger Vehicles' Necessary Features

THE Commissioners of Customs and Excise have given notice that in order to qualify for the exemption under Group 35(c) and the exception from chassis tax under Group 35(d), which is confined to vehicles constructed or adapted *mainly* for the carriage of passengers, a 12-seater vehicle must be of a kind not likely to be used mainly for the carriage of goods. It should be either of the public service type or of a kind supplied to local authorities, firms and other organisations which maintain their own transport service for personnel, clients, etc., and to firms providing similar transport for hire.

Having reviewed the matter, the Commissioners have decided that such vehicles should possess the following features:—

(1) The vehicle must provide adequate seating for not less than 12 persons including the driver and must thus be suitable for carrying a weight of 15 cwt. or more.

(2) Where separate seats are provided, one person shall be counted for each separate seat; when the vehicle is fitted with continuous seats, one person shall be counted for each complete length of 16 in. measured lengthwise on the front of each such seat.

(3) The seats must be permanently fixed to the floor and/or sides of the vehicle and must not be constructed so as to tip up, fold down, swivel or pivot into different positions, except in the case of not more than three single seats, where necessary for the purposes of ingress and egress.

(4) The shortest distance between the front edge of a seat and the front edge of any seat facing it must be not less than 1 ft. 6 in.

(5) The total area of the seats must be more than half the floor space of the vehicle.

(6) There must be a vertical clearance of at least 3 ft. above the whole area of seating (to be measured with seats uncompressed).

(7) There must be exits for passengers both on the near side of the vehicle and at the back; the exits must have a step or steps unless the floor of the vehicle is 1 ft. 5 in. or less from the ground. All exit doors must be opened from the inside as well as the outside.

(8) There must be side windows to give adequate light for the whole interior of the vehicle, and there must be adequate ventilation.

Particulars of vehicles which are claimed to be substantially passenger vehicles seating 12 or more, but in which any of the above features is not present, should be submitted to the Commissioners through the local officer of Customs and Excise. The above specification will be effective as from October 1, in place of the decisions previously notified by the Commissioners to individual traders.

FIRE DANGER IN BACK-TO-BACK HOUSES

Birmingham Experiments with Escape Hatches

LESS than three weeks after a father and five of his children died in a fire which destroyed their three-storey back-to-back type house, in Birmingham, a decision was made, on August 12, for experiments with an escape hatch connecting adjoining houses.

The decision was taken at a conference attended by the chairmen of the health, fire brigade, and housing management committees, and officials. They decided that the most practical suggestion put forward for minimising fire danger in back-to-back houses was that for escape hatches.

In a statement afterwards, ALDERMAN G. CORBYN BARROW, chairman of the health committee, said that a report from the chief fire officer showed that the incidence of fires in such houses was no greater than in any other type. The danger from fire in back-to-back houses was, however, much greater than in houses with a separate staircase. "We hope," he added, "that if the experiments with escape hatches in some of our houses are successful, private landlords will follow our example."

The hatches will be installed between the adjoining houses, near the floor. Alderman Barrow said it was felt that the best way was to provide panels which could easily be broken into in an event of an emergency. It was thought inadvisable to have a hatch with lock and key because keys were easily lost or taken by children. The hatches will cost £2 for each house.

The number of back-to-back houses in Birmingham was stated to be 26,000, 11,000 of which are municipally owned.

BRITISH STANDARDS.

Among the recent issues of British Standards is BS 771, "Synthetic resin (phenolic) moulding materials," price 6s. Copies from the British Standards Institution, 2, Park-street, W1.

BEHAVIOUR OF MATERIALS

A note on the "Behaviour of Building Materials in Tropical Regions" has been published by the Department of Works, Commonwealth Experimental Building Station, Post Office Box 30, Chatswood, NSW, Australia, for inclusion in their series of notes on "The Science of Building." It covers weathering factors and the performance of various materials.

STEEL SHORTAGE IN NORTH-EAST

Owing to the easing of the licensing restrictions in the building industry, a shortage of medium and large steel sections has arisen in the north-eastern areas. It is believed that since steel supplies became easier some time ago, more firms are using steel in place of reinforced concrete and this has helped to create a temporary shortage. In some cases, it is reported, constructional engineers have been informed that further deliveries of steel sections cannot be made for some months.

It's a firm foundation

For FASTER BIGGER PROFITS

When it comes to a tough job in a short time the new Mark III County Crawler has an absolutely clear lead. Fitted with Onions Model 10 Power Control Unit and 3-4 Scraper, here is sound earning power.

• *World distributors for Onions Equipment*

JACK OLDING & COMPANY LIMITED

• *Low capital outlay, low cost per cubic yard of fuel consumption and tractor maintenance.*

• *Exceptional manoeuvrability, high drawbar pull, low ground pressure, six forward and two reverse speeds, and powerful Fordson Diesel engine characterises the County Crawler.*

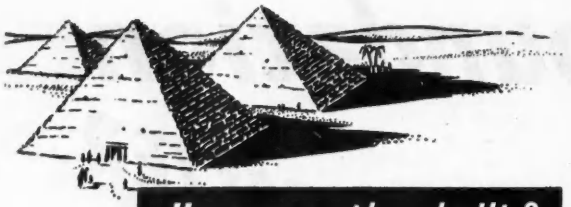
• *Stability, manoeuvrability, and high apron loading characterise the Onions Scraper, which is of open bowl construction.*

• *When time is money there is no need to be held up for spares and servicing, as sales and service are handled by Fordson Dealer organisation.*

COUNTY CRAWLER MARK III

FORDSON MAJOR WITH COUNTY FULL TRACKS

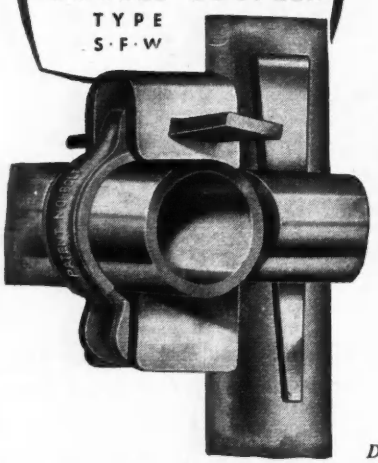
COUNTY COMMERCIAL CARS (SALES) LIMITED · FLEET · HANTS



How were they built?

It's always been a bit of a puzzle and we can only guess how long it took or how much it cost to build the Pyramids. But the Egyptians used slave labour anyway, so it doesn't really count. Today you have to pay all along the line: labour, time, materials and everything, so any ideas on saving are very welcome. When it comes to scaffolding there's a very simple way to cut costs and that's by using the fabricated NO-BOLT Double Coupler. It's strong and makes the safest, most secure method of joining scaffolding tubes yet thought of. And you don't need to be a Nubian slave to fix it, nor do you need spanners, nuts or bolts; a mere tap with a hammer is all that's required. Releasing it is just as easy. It's fastened by nothing more complicated than a wedge—an idea that's as old as the Nile, in a setting as modern as tomorrow.

FABRICATED
NO-BOLT
DOUBLE COUPLER
TYPE
S·F·W

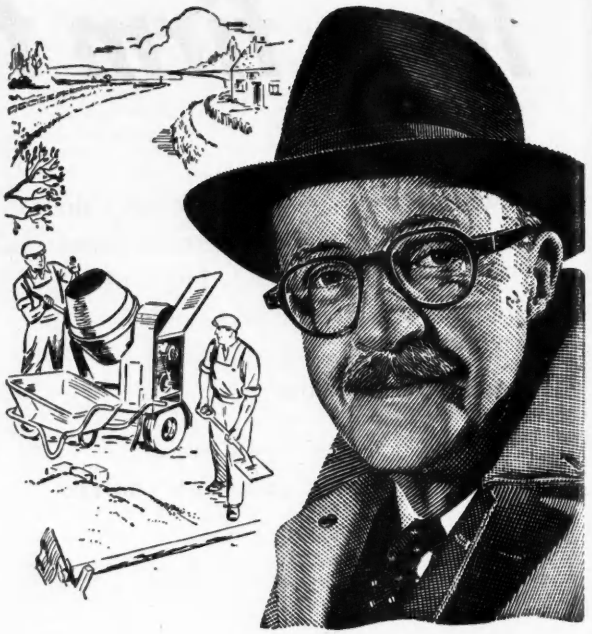


Supplied also with
CAPTIVE WEDGES
which cannot be lost. Quick delivery ex-stock and an efficient service guaranteed.

Demonstrations arranged to prove that with the NO-BOLT system any form of scaffolding can be erected at less cost. Five times the work for the same labour cost—an 80% saving—is typical

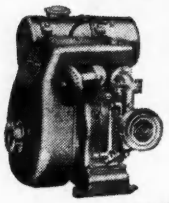
BB & EA

BRITISH BUILDING & ENGINEERING APPLIANCES LTD.
63-65 London Road, Sandy, Bedfordshire. Tel.: Sandy 104



'We take a pride in our roads...

It's no trouble keeping them in good shape when you have the right machines for the job. As Borough Engineer I make sure that all our mechanical road repair equipment is fitted with Villiers engines. I've learnt to rely on Villiers for consistent performance, day in and day out. And the low running costs keep the Borough Treasurer happy too!'



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THE POWER AND THE HEART OF A FINE MACHINE

Villiers ENGINES DRIVE
BARROWS · CULTIVATORS · LAWN MOWERS · MOTOR SCYTHES
CONCRETE MIXERS · CROP SPRAYERS · HEDGE CUTTERS
LIGHTING PLANTS · PUMPS · TRUCKS · SAWS · MOTOR CYCLES

THE VILLIERS ENGINEERING CO. LTD, WOLVERHAMPTON

The Builder

CURRENT PRICES OF MATERIALS

THE information given on these pages has been specially compiled for *The Builder* and is copyright. It is the intention that the details given should indicate fair average prices of materials not necessarily the highest or the lowest. The prices apply to large quantities of materials loaded at works, delivered at London Stations or at site in London Area as stated. Prices for smaller quantities ex merchants warehouse will necessarily be higher so as to include the stocking and handling costs involved. Due to the exceptional circumstances now prevailing it is recommended that the prices of materials should be confirmed by inquiry from suppliers and merchants.

AGGREGATES AND SAND

Delivered site in full lorry loads. Average of prices for Boroughs of Westminster, Paddington, Holborn and St. Pancras.

		£	s.	d.
Pit Ballast	per yd.	1	3	1
Pit Sand	,,	1	1	8
Washed Sand	,,	1	3	8
¾ in. Shingle	,,	1	0	0
¾ in. Broken Brick	,,		19	3
Pan Breeze	,,		9	6
Fine or Coarse Foamed Slag Aggregate ... 2 yds. of fine and 2.6 yds. of coarse per ton	per ton	3	0	9

CEMENT, etc.

Including non-returnable jute sacks or paper bags.

		£	s.	d.
Best British Portland Cement. Standard Specification delivered Charing Cross area. 6-ton loads and upwards, site	per ton	4	16	6
1 to 6 tons, site	,,	5	5	6
Ferrocrete Rapid Hardening Cement in 6-ton loads and upwards to site	,,	5	4	6
1 to 6 ton do. site	,,	5	13	6
Aquacrete Water Repellent Cement. 32s. 6d. per ton on ordinary cement prices.				
Red, Buff or Khaki Colorcrete in 6-ton lots	,,	6	18	0
Other colours according to colour.				
In 4-ton lots from 211s. 9d. to 435s. 9d. per ton.				
White Portland Cement	,,	12	17	0
Under 1 ton	per cwt.		15	4
417 Cement (Ultra Rapid Hardening) in 6-ton lots and upwards	per ton	6	9	0
Super Cement (Waterproof), 32s. 6d. per ton above Portland Cement.				
Cullamix Tyrolean Finish, £9 4s. 3d. to £10 17s. 9d. (1-ton loads and upwards).				
Lightning and Ciment Fondu Brands High Aluminous cement, 6-ton lots and up	,,	14	0	9
Stourbridge Fireclay, 6-ton loads at Railway Depot, London	,,	6	2	3

BRICKS

Full Loads.

		£	s.	d.
First Hard Stocks	per 1,000	11	7	0
Second Hard Stocks	,,	10	11	0
Mild Stocks	,,	8	16	6
All loaded free into lorry at the works. The question of haulage is still very difficult and prices must be obtained from job to job.				
2½ in. Nominal Fletton Bricks to sites in W.C. District Commons	,,	5	13	0
Cellular do.	,,	5	13	0
Keyed do.	,,	5	15	0
Rustics	,,	6	18	0
Cellular Rustics	,,	6	18	0
Single Bullnose do.	,,	6	13	0
Sandfaced	,,	7	13	0
Best Blue Pressed Staffs (London Stations)	,,	24	19	6
Do. Bullnose (London Stations)	,,	25	13	6
Blue Wire Cuts (London Stations)	,,	22	11	0
Midhurst Lime Bricks (London Sites)	,,	10	3	0
Uxbridge Whites (London Sites)	,,	9	1	6
2½ in. Best Stourbridge Fire Bricks (London Stations)	,,	24	6	0
3 in. do. (London Stations)	,,	29	3	3
2½ in. Machine-made Sandfaced Red Facings (London Sites)	,,	13	19	6
2½ in. Machine-made Multi Red Facings (London Sites)	,,	14	4	6
2½ in. Hand-made Sandfaced Red Facings (London Sites)	,,	14	7	0
2½ in. Hand-made Sandfaced Multi-Colour Facings (London Sites)	,,	14	7	0
2½ in. Surrey Clamp Burnt Multi Stock Facings (London Sites)	,,	13	6	0
2½ in. Surrey Kiln Burnt Multi Stock Facings (London Sites)	per 1,000	14	4	6
Glazed Bricks (London sites), White, Ivory, Brown—				
Stretchers	,,	64	0	0
Headers	,,	63	0	0
Quoins, Bullnose and 4½ in. Flats	,,	80	0	0
Double Stretchers	,,	85	0	0
Double Headers	,,	77	10	0
One side and two ends	,,	87	0	0
Two sides and one end	,,	89	10	0
Splays and Squints	,,	83	0	0
Cream and Buff £3 extra over White. Other colours, hard glaze, £8 10s. 0d. extra over White. All above prices plus 7½% for Best quality and plus 7½% less 10% for Second quality.				

PARTITION SLABS, etc.

Delivered Central London Area.

HOLLOW CLAY PARTITION BLOCKS (Keyed)

	Minimum lorry loads.		£	s.	d.
2 in.	140 yds.	per yd. sup.		4	3
2½ in.	140 yds.	,,		4	6
3 in.	120 yds.	,,		5	0
4 in. (6 cavity)	95 yds.	,,		6	7
Half blocks at no extra charge.					

CLINKER CONCRETE.

			£	s.	d.
2 in.	100 yds.	,,		3	7
2½ in.	85 yds.	,,		4	2
3 in.	75 yds.	,,		5	0
4 in.	55 yds.	,,		6	2

CRANHAM

		£	s.	d.
2 in.	,,		6	5
2½ in.	,,		7	1
3 in.	,,		8	3
4 in.	,,		10	2
4½ in. Load bearing quality	,,		11	2

FLOOR BLOCKS

		£	s.	d.
3 in. Floor Blocks 12 in. by 12 in. delivered in full lorry-loads	per 1,000	31	10	0
4 in. do.	,,	34	13	0
5 in. do.	,,	39	7	0
6 in. do.	,,	46	16	0
7 in. do.	,,	54	1	0
8 in. do.	,,	61	15	0

STONEWARE DRAIN PIPES, etc.

The following are the percentages to be added to the Standard List prices delivered London Area.

	Over 2 tons	Over 100 Pieces under 2 tons	Under 100 Pieces under 2 tons
Best Quality	+67½%	+97½%	+107½%
B.S.S. Best do.	+10% +67½%	+10% +97½%	+10% +107½%
Tested Quality	+37½% +67½%	+37½% +97½%	+37½% +107½%
B.S.S. Tested do.	+47½% +67½%	+47½% +97½%	+47½% +107½%

		£	s.	d.
3 in. Land Drain Pipes (in 12 in. lengths)	per 1,000	10	8	6
4 in. do.	,,	13	14	6

STONE

		£	s.	d.
Bath Stone—				
Monks Park	per ft. cube		7	10
St. Aldhelm Box Ground	,,		8	10
Delivered in railway trucks at South Lambeth B.R. Western Region				
Doulting Stone Random Blocks. Delivered London area	,,		8	4
Beer Stone. Delivered London area	,,		8	0
Portland Stone—				
Brown Whitbed in random blocks, 20 ft. average delivered in railway trucks at Nine Elms, B.R. Southern Region	,,		7	1½
Hopton-Wood Stone—				
F.O.R. Quarries, Wirksworth, Derbyshire—				
¾ in. Slabs for wall lining, sawn two sides in random sizes up to 5 ft. and not over 15 ft. super in area	per ft. sup.		6	2
1½ in. Slabs for paving, sawn two sides as above described	,,		8	6
Yorkshire Stone—Blue Robin Hood Quality.				
Delivered to site London in 6-ton lots.				
9 in. × 3 in. Rubbed, weathered, throated and stooled cills	per ft. cube	3	4	3
12 in. × 6 in. do. do.	,,	2	6	0
12 in. × 3 in. Plain coping, twice throated	,,	1	15	4
12 in. × 3 in. Weathered and twice throated coping	,,	2	7	4
14 in. × 6 in. do. do.	,,	2	2	8
4½ in. × 9 in. Plinth, rubbed on top and face	,,	1	18	1
3 in. sawn two sides Slabs, random sizes	per ft. sup.		6	9

STONE—*continued*

		£ s. d.
Templates and Cover Stones, 3 in., 4 in. and 6 in. thick, edges coped for rendered brickwork ...	per ft. cube	1 3 5
Do. do. fair one edge for fair faced brickwork		1 7 10
Hard York—		
12 in. ×2 in. Square Steps, rubbed on top and edge	per ft. run	8 2
14 in. × 3 in. Round-nosed Steps, rubbed on top and front	per ft. cube	2 3 8
12 in. ×6 in. Plain Steps, rubbed top and front ...	,,	1 18 3
2 in. Rubbed and Jointed Paving, given sizes ...	per ft. sup.	7 10
2 in. Sawn Paving, edges squared, in random sizes	per yd. sup	2 13 10

TILES and PANTILES

Delivered London area by road in 6 tons or over per 1,000

								£ s. d.
Machine-made Pantiles and French pattern Tiles from Lincolnshire district								29 8 0
Hand-made Pantiles Berkshire district								47 10 0
Hand-made Double Roman Bridgwater district								58 13 6
Hand-made 10½ × 6½ tiles Berkshire district								13 1 9
Machine-made 10½ × 6½ Staffordshire district								13 8 9
Hand-made Hip and Valley tiles per doz.								1 8 9
Machine-made Hip and Valley tiles do.								1 6 6
Concrete tiles 10½ × 6½								7 14 6
do. Interlocking (49S)								18 9 6

NOTE.—Breakage in transit, purchasers' responsibility.

SLATES

First-quality Slates from Penrhyn or Portmadoc, carriage paid in full truck loads to London Rate Station. Per 1,000 actual.

									£ s. d.
24 × 12	...	...	...	...	...	...	...	...	113 0 4
22 × 12	...	...	...	...	...	...	...	...	93 16 0
22 × 11	...	...	...	...	...	...	...	...	84 15 0
20 × 12	...	...	...	...	...	...	...	...	79 19 6
20 × 10	...	...	...	...	...	...	...	...	74 12 0
18 × 10	...	...	...	...	...	...	...	...	53 18 9
18 × 9	...	...	...	...	...	...	...	...	47 5 6
16 × 10	...	...	...	...	...	...	...	...	44 7 0
16 × 8	...	...	...	...	...	...	...	...	34 10 6

NOTE.—Breakage in transit, purchasers' responsibility.

TIMBER

				£ s. d.
Softwood—				
Joinery quality	Ex. Wharf	per standard		£105 to £125
Carcassing quality	do.	,,		£95 to £100
1 in. Tongued and Grooved Flooring	do.	,,		£106 0 0
Hardwood—				
Mahogany—African S.E. ...	do.	per ft. cube		1 5 0
do. Honduras do. ...	do.	,,		3 5 0
Oak European do. ...	do.	,,		1 18 6
do. Japanese do. ...	do.	,,		2 5 0
do. English Logs sawn	do.	,,		1 5 0
Teak 8 in. average S.E.	do.	,,		3 0 0
Walnut African Logs sawn	do.	,,		1 1 6

DOORS (in Lots 1-11)

Delivered London area.

		£ s. d.
1½ in. 4 Horizontal Panel Pattern 4 in. deal		
2 ft. 0 in. × 6 ft. 6 in.	each	1 12 0
2 ft. 3 in. × 6 ft. 6 in.	,,	1 13 0
2 ft. 6 in. × 6 ft. 6 in.	,,	1 14 0
2 ft. 9 in. × 6 ft. 6 in.	,,	1 16 6
2 in. do. but top panel open. Pattern 4 × G in deal		
2 ft. 6 in. × 6 ft. 6 in.	,,	2 9 0
2 ft. 9 in. × 6 ft. 6 in.	,,	2 11 6
2 in. Panel, top panel open. Pattern 2 × G in deal		
2 ft. 6 in. × 6 ft. 6 in.	,,	2 1 9
2 ft. 9 in. × 6 ft. 6 in.	,,	2 3 6

SUNDRIES

Delivered London area

							£ s. d.
1 in. Wood Wool Slabs, 6 ft. 0 in. × 2 ft. 0 in. in quantities of 1 ton (89 yds. to 1 ton)					per yd.		5 8
1½ in. do. (67 yds. to 1 ton)					,,		7 4
2 in. do. (52 yds. to 1 ton)					,,		8 11½
2½ in. do. (45 yds. to 1 ton)					,,		10 3
3 in. do. (39 yds. to 1 ton)					,,		11 5½
Quantities under 1 ton add 1d. per ½ in. of thickness.							
½ in. imported insulation Board, quantities over 5,000 sq. ft.						per 100 sq. ft.	2 2 6
¼ in. Hardboard do.					,,		2 3 6
⅛ in. do. do.					,,		3 5 0
⅛ in. Asbestos Flat Building Sheets ...					per yd. sup		3 2
Roofing Felt, 1-ply					,,		1 6
do. 2-ply					,,		1 9
Best Scotch Glue, in slabs					per ½ cwt.		5 0 0
do. pearl					,,		5 5 0
Croid Glue					28 lb.		2 5 0
Cut Nails 3 in. (1-ton lots)					per ton		56 5 0
do. 4 in. and up (1-ton lots)					,,		52 15 0
Wire Nails, 3 in. (4-cwt. lots)					per cwt.		2 16 3
do. 4 in. and up (4-cwt. lots)					,,		2 12 9

METALS — STEEL JOISTS, ETC.

		£ s. d.
Basis Joists—		
6 in. × 5 in., 8 in. × 5 in., 8 in. × 6 in., 10 in. × 6 in. 12 in. × 6 in. plain cut to lengths delivered London area	per ton	38 7 6
Extra for sizes		
3 in. × 1½ in.	,,	3 10 0
3 in. × 3 in., 4 in. × 3 in., 5 in. × 2½ in. ...	,,	1 5 0
4 in. × 1½ in.	,,	3 0 0
4½ in. × 1½ in., 24 in. × 7½ in.	,,	2 0 0
5 in. × 3 in., 22 in. × 7 in.	,,	1 0 0
6 in. × 3 in.	... per ton	1 10 0
9 in. × 7 in.	,,	5 0
10 in. × 4½ in. 12 in. × 5 in.	,,	15 0
5 in. × 4½ in. 6 in. × 4½ in. 7 in. × 3½ in. 7 in. × 4 in. 8 in. × 4 in. 9 in. × 4 in. 10 in. × 5 in. 10 in. × 8 in. 12 in. × 8 in. 13 in. × 5 in. 14 in. × 5½ in. 14 in. × 6 in. 14 in. × 8 in. 15 in. × 5 in. 15 in. × 6 in. 16 in. × 6 in. 16 in. × 8 in. 18 in. × 6 in. 18 in. × 7 in. 18 in. × 8 in. 20 in. × 6½ in. 20 in. × 7½ in.	,,	10 0
Steel angles average price	,,	39 12 6
Steel tees average price	,,	40 12 6
Fabricated work delivered London—		
R.S. Joists cut and fitted	,,	53 7 6
Compound girders	,,	58 12 6
Stanchions	,,	63 17 6
Compound stanchions	,,	67 7 6
In Roof Work—Trusses and Purlins	,,	79 7 6
Average prices not for awkward work.		
Mild Steel Ferro-Concrete bars to BSS785 ex London		
Stock ⅜ in. diam., and upwards	,,	39 14 6
¼ in. diam.	...per ton extra	3 12 0
5/16 in. do.	,,	2 17 0
⅜ in. do.	,,	2 2 0
½ in. do.	,,	1 7 0

MILD STEEL TUBES

Tubes to BSS1387 and Fittings. List prices and following discounts:

Galvanised Tube—	W.I. Fittings	Malleable Fittings
Class A — 1⅜%		
Class B + 7⅛%	Light + 23½%	Malleable List — 35% + 40%
Class C + 23¾%	Heavy + 30¾%	
Black—		
Class A — 22%		
Class B — 11⅜%	Light + 11%	Malleable List — 35%
Class C + ⅜%	Heavy + 18½%	

C.I. HALF-ROUND GUTTERS

Delivered London per yd. in 6-ft. lengths

	Gutters	Nozzles	Stop Ends
3 in.	3/2	2/9	/10
3½ in.	3/5½	3/–	/10
4 in.	4/5½	3/5	1/2
4½ in.	4/10½	3/9	1/6
5 in.	5/5½	4/2	1/8

C.I.O.G. GUTTERS

3 in.	4/1	3/8	/11
3½ in.	4/6½	3/8	1/2
4 in.	5/–	3/9	1/6
4½ in.	5/5½	4/5	1/8
5 in.	5/11	5/1	1/11

C.I. RAIN-WATER PIPES

Per yd. in 6-ft. lengths	Pipe	Bends	Branches
2 in.	6/5½	3/5	4/10
2½ in.	6/9	3/9	6/8
3 in.	7/7	4/9	7/3
3½ in.	8/7	5/8	8/7
4 in.	9/11½	6/11	10/2

L.C.C. COATED SOIL PIPES

2 in.	7/7½	5/10	7/2
2½ in.	8/1	6/6	8/11
3 in.	9/0½	7/2	10/8
3½ in.	10/1½	8/11	12/5
4 in.	11/6½	10/–	14/7

Above prices for gutters, rain-water and soil pipes for under 3 cwt. lots only. Lots over 3 cwt. see List No. 3200 dated May 1, 1952, plus 10% and tonnage allowance. 4-ton lots 5 per cent, 2-ton lots 2½ per cent.

L.C.C. COATED DRAIN PIPES

In 9-fts.

	cwt. qr. lb.	per yd.	Bends	Branches
4 in.	1 1 17	24/5	16/6	28/9
6 in.	2 0 1	36/3	34/3	58/9

ASBESTOS RAIN-WATER PIPES AND FITTINGS

Orders under £30 less 12½ per cent. discount.
Orders over £30 less 17½ per cent. discount.

	2 in.	2½ in.	3 in.	4 in.
Pipes 6-ft. lengths ...per yd.	3/9	4/–	4/10	6/5
Shoes ... ... each	2/5	2/8	3/2	4/3
Single Branches ... ,,	3/9	4/6	5/4	7/6
Bends square or obtuse ,,	2/8	2/11	3/9	5/4
Swan Necks 4½ in. proj. ,,	2/11	3/9	4/3	5/11
do. 6 in. do. ,,	3/2	3/9	4/10	6/5

ASBESTOS O.G. GUTTERS AND FITTINGS

	4 in.	4½ in.	5 in.	6 in.
Gutters 6-ft. lengths ...per yd.	3/7	3/11	4/8	5/7½
Drop ends ... ... each	2/10	3/4	3/10	4/7
Stop Ends ... ... ,,	/10	/11	1/–	1/2
Angles ... ... ,,	2/11	3/5	4/1	4/10
Nozzles ... ... ,,	2/10	3/4	3/10	4/7
Union Clips ... ... ,,	1/5	1/8	2/1	2/5

ASBESTOS HALF-ROUND GUTTERS AND FITTINGS

	3 in.	4 in.	4½ in.	5 in.	6 in.
Gutters 6-ft. lengths ...per yd.	2/6	2/11½	3/0½	3/7	5/–
Drop ends ... ... each	2/1	2/5	2/8	2/11	4/3
Stop ends ... ... ,,	/9	/10	/11	1/–	1/2
Angles ... ... ,,	2/5	2/8	2/11	3/2	4/3
Nozzles ... ... ,,	2/1	2/5	2/8	2/11	4/3
Union Clips ... ... ,,	1/–	1/1	1/2	1/4	2/–

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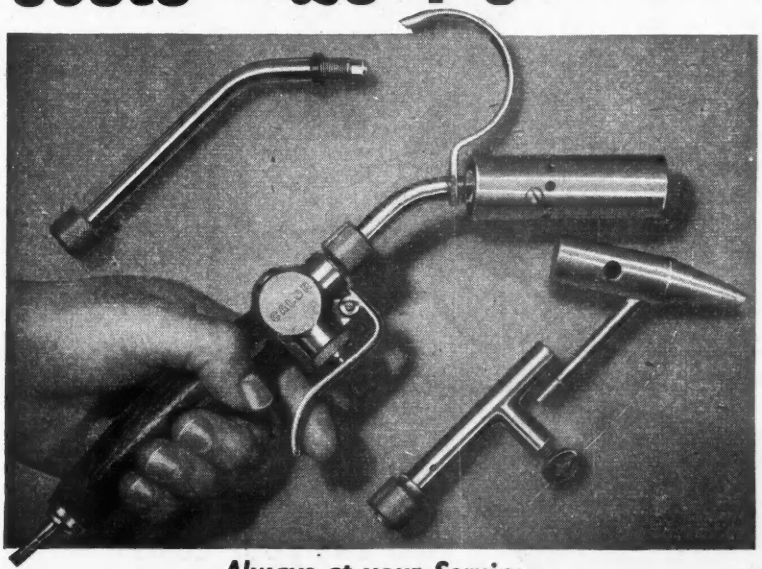

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The "REX" has everything you need in a 3½T mixer and will mix mortar as well as concrete. Sturdy, rugged, yet light in weight for easy manoeuvring, simple and easy to operate, economical to run and maintain, the "REX" 3½T is ideal for the small jobs as well as for scattered work on large contracts. Details and prices on request.

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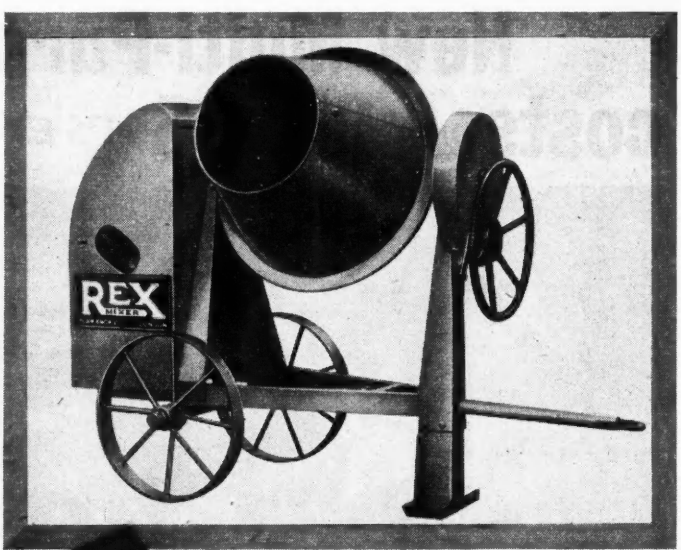

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BK87

METALS—*continued*

	Per ton basis in London £ s. d.
Iron—Staffordshire Crown Merchant Quality	40 2 6
Mild Steel Bars	37 17 6
Mild Steel Hoops	39 5 0
	Ex Merchant's Stock per ton Two-ton lots £ s. d.
Soft sheets C.R. and C.A.—	
20 gauge	46 14 6
24 gauge	47 19 6
26 gauge	49 9 6
Galvanised Corrugated sheets 6 ft. to 9 ft.—	
20 gauge	53 12 0
24 gauge	55 12 0
26 gauge	58 7 0
Galvanised Flat sheets C.R. and C.A.—	
20 gauge	54 12 0
24 gauge	56 12 0
26 gauge	59 7 0

Plumbers' Brass Work, Copper, Zinc, etc.

Delivered in London area. M.O.H.

All per doz.	½ in.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.
Screwdown bib cocks Crutch head for iron	73/6	109/3				
Toilet bib cocks for iron	94/6	135/6				
Screwdown stop cocks for iron	63/–	91/3	179/6	308/9	441/–	778/–
do. with two unions for lead	85/–	126/–	223/9	400/–	529/–	1178/–
Double nut boiler screws	15/9	22/–	40/–	41/–	56/9	80/–
Heavy Croydon ball valves	65/–	148/–	226/9	413/9	586/–	
Plumbers' union brass lead to iron	16/6	20/–	33/–	57/9	71/–	138/9
	1½ in.	1¾ in.	2 in.	3 in.	3½ in.	4 in.
Caps and screws	28/6	34/9	50/6	78/9	100/9	131/3
Brass sleeves		26/3	26/3	47/3	63/–,	64/–
		1¼ × 6 lb.	1¼ × 6 lb.	2 × 7 lb.	3 × 7 lb.	
Lead P. trap with brass cleaning screws	60/9		75/9	121/–		207/–
Lead S. trap do.	73/3		91/–	149/–		267/9

Solder	s. d.
Plumbers'	3 3
Tinmen's	4 0
Blow pipe	4 1

Copper tubes BSS 659/1944 on the basic price of 27⅜d. per lb. plus gauge and manufacturing extras as follows. Minimum quantities, 3 cwt.

	Extra d.		d.
⅛ in. × 19 gauge	12½	Total per lb.	39⅜
¼ in. × 19 ,,	10¾	,, ,,	38⅛
1 in. × 18 ,,	9¼	,, ,,	36⅝
1¼ in. × 18 ,,	8¼	,, ,,	36⅜
1½ in. × 18 ,,	8¼	,, ,,	36⅜
2 in. × 17 ,,	10¼	,, ,,	37⅜

		£ s. d.
Rolled Copper sheets up to 48 in. wide, basic price plus gauge and manufacturing extras	per ton	296 5 0
Sheet Zinc, 10 gauge (25 SWG) 5 cwt. lots upwards	per cwt.	6 16 0
do. 12 gauge (23 SWG) do.	,,	6 14 0
do. 14 gauge (21 SWG) do.	,,	6 12 9
Brass tubes basic price, plus gauge and manufacturing extras	per lb.	1 10⅞

LEAD SHEET AND PIPES

Basis selling price in minimum one-ton delivery to one address in London or Home Counties

		£ s. d.
Lead Sheet, English, 3½ lb. substance and upwards	per ton	133 0 0
Lead Water Pipe in coils	,,	134 5 0
Lead Soil Pipe, 10 ft. or over 2 in. to 4 in. dia.	,,	135 15 0
do. over 4 in. dia.	,,	137 15 0
Lead Gas or Untinned Compo pipe	,,	135 15 0
Extras over Basis for quantities under 1 ton		
5 cwt. and under 1 ton	per cwt.	2 0
3 cwt. do. 5 cwt.	,,	4 0
1 cwt. do. 3 cwt.	,,	6 0

Smaller quantities than 1 cwt. priced specially.
Supplying sheet lead and lead pipe to less than basis weights and cutting to sizes less than basis charged extra according to current trade schedule.
Allowance for Old Lead, collected £88 10s. 0d. per ton weighed at buyer's works.

PLASTER, etc.

		£ s. d.
Coarse Pink in 1-ton loads and over Delivered on Site	per ton	7 6 6
do. White do. do.	,,	7 14 3
Sirapite Coarse do. do.	,,	7 9 0
do. Fine do. do.	,,	7 17 0
Blue Lias Lime in 6-ton loads	,,	6 9 6
Hydrated Lime do.	,,	5 12 6
Lump Lime do.	,,	5 2 0
White Keen's or Parian Cement in 1-ton loads	,,	10 4 0
Pink Keen's or Parian Cement in 1-ton loads	,,	9 18 6
Granite Chips in 6-ton loads	,,	2 6 3
Hair	per cwt.	4 17 6
Gypsum Plaster Lath or Base Board ⅜ in. thick 600 yds. and over in one delivery. Delivered site	per yd.	2 2
1,200 yds.	,,	2 1½
Gypsum Plaster Wall Boards, 3 and 4 ft. wide, 6 to 12 ft., ⅜ in. thick, 600 yds. and over in one delivery. Delivered site	,,	2 5
1,200 yds.	,,	2 4½

PAINT AND DISTEMPER

Delivered London area		£ s. d.
Ceiling Distemper	per cwt.	1 12 0
Washable Distemper	,,	5 12 0
Gloss Paint	per gal.	2 13 0
Snowcem cement paint (in 1 cwt. drums)	per cwt.	3 11 0

Lead Products and Oils.

Ground White Lead, 1 cwt. kegs	per cwt.	8 10 0
Genuine White Lead Paint, 20 gal. lots in 1 gal. tins	per gal.	3 0 0
Genuine Red Lead, Dry, 1 cwt. keg	per cwt.	6 13 3
Genuine Linseed Oil Putty, 1 cwt. keg	,,	2 7 0
Size XD quality, 28 lb.	per tin	9 0
Raw Linseed Oil (5 gal.) Drums extra	per gal	11 6
Boiled Linseed Oil (5 gal.) do.	,,	12 0

Sundries.

Turpentine substitute (5 gal.) drums extra	,,	5 6½
do. do. (40 gal.) do. do.	,,	4 8½
Solignum, Brown (5 gal. cans) Exterior	,,	6 6
Creosote (40 gal. barrels)	,,	2 0
Paste Powder (1 lb. packets)	per lb.	1 6
White Lining Paper	per piece	1 0

VARNISHES, etc.

Delivered London area.		£ s. d.
Oak Varnish, Outside or Inside	per gal.	1 12 6
Oak Pale Copal do.	,,	1 15 0
Hard Drying Oak for Inside	,,	1 17 6
Crystal Paper Varnish do.	,,	2 2 6
Eggshell Flat Varnish do.	,,	2 2 6
Finest Carriage Varnish	,,	2 10 0
Front Door Varnish	,,	1 17 6
Japan Gold Size	,,	1 10 0
Black Japan	,,	1 5 0
Brunswick Black	,,	1 0 0
Berlin Black	,,	1 5 0
Terebene	,,	1 5 0
Knotting (1 gal. bottles free)	,,	2 0 0
French and Brush Polish (do.)	,,	1 13 0

GLASS

Delivered London area.	Per ft. super s. d.
18 oz. Sheet Glass, Ordinary Glazing Quality. Cut Sizes	5½
24 oz. ,, ,, ,, ,, ,, ,,	7½
26 oz. ,, ,, ,, ,, ,, ,,	9½
32 oz. ,, ,, ,, ,, ,, ,,	1 0
⅛ in. Rolled Plate	9
⅛ in. and ¼ in. Rough Cast	1 0
⅛ in. Figured Rolled and Cathedral, Standard patterns:	
White	9
do. Standard Tints	1 4½
do. Special Tints	2 9
⅛ in. Cross Flexon, Pinstripe, Hammerstripe, Reeded, Reedlyte and Luminating	1 1
¼ in. Wired Cast	1 2
¼ in. Georgian Wired Cast	1 2½

Hollow Glass Blocks—	Each.
P.B.2 5¾ × 5¾ × 3⅞ in.	2 9
P.B.3 7¾ × 7¾ × 3⅞ in.	4 2
P.B.32 7¾ × 7¾ × 3⅞ in.	4 2
Radiused Corner Blocks to match up with—	
P.B.2	5 3
P.B.3	6 9
P.B.32	6 9

¼ in. Polished Plate Glass, G.G. Quality—	Per ft. super
In plates not exceeding 2 ft. sup.	3 7
,, ,, ,, 5 ft. sup.	4 5
,, ,, ,, 45 ft. sup.	5 1
,, ,, ,, 100 ft. sup.	5 6

¼ in. Polished Plate, extra sizes, *i.e.*, plates exceeding 100 ft. sup. or 160 in. one way or 96 in. both ways. G.G. quality—

Not exceeding 135 ft. sup. or 250 in. one way or 135 in. both ways	8 4
Not exceeding 180 ft. sup., or ditto	11 3
Not exceeding 200 ft. sup., or ditto	16 0

Plates exceeding 200 ft. sup. prices on application.
Substances other than ¼ in. Polished Plate at Special Prices.

Quantity Tariff—Sheet and Sundry Glass

The following prices apply to minimum quantities of one size and one pattern delivered by the manufacturer to one site at one time.

Description of Glass	Minimum quantity.	Per ft. super s. d.
18 oz. sheet O.Q.	3,000	4
24 oz. ,, ,,	2,000	5¾
26 oz. ,, ,,	2,000	7⅛
32 oz. ,, ,,	2,000	9½
⅛ in. Rolled Plate	1,000	7½
⅛ in. Figured Rolled and Cathedral Standard Patterns, White	1,000	7½
⅛ in. Cross Flexon, Pinstripe, Hammerstripe, Reeded, Luminating and Spotlyte	1,000	10½
⅛ in. and ¼ in. Rolled Plate or Rough Cast	2,000	10⅝
¼ in. Wired Cast, Hexagonal	2,000	11⅞
¼ in. Georgian Wired Cast	2,000	1 0½

The Builder

CURRENT RATES OF WAGES

AS FROM MAY 24, 1954. **(Every endeavour is made to ensure accuracy but we cannot be responsible for errors.)**

KEY TO SCHEDULE OF GRADE RATES.

Grade Classification.	A	A1	A2	A3
Craftsmen	3/9	3/8½	3/8	3/7½
Labourers	3/3½	3/3	3/2½	3/2

Town.	Grade
Aberavon	A
Aberdare	A
Abergavenny	A
Abingdon	A2
Accrington	A
Addiestone	A
Aldeburgh	A2
Aldershot District	A2
Alfreton U.D.	A
Alnwick	A1
Altrincham	A
Amble	A1
Amersham	A1
Ammanford	A
Andover	A2
Ardingly	A2
Arundel	A2
Ascot	A2
Ashby-de-la-Zouch U.D.	A
Ashby Woulds U.D.	A
Ashford (Kent)	A2
Ashford (Middlesex)	A
Ashington	A
Ashtead	A
Ashton-under-Lyne	A
Aspatria and Brayton	A2
Atherstone R.D. (parts of)	A
Aylesbury	A2
Aylesby (Yorks)	A
Aylesham	A2
Bagshot	A2
Bakewell U.D.	A2
Banbury	A2
Barnard Castle U.D.	A
Barnoldswick U.D.	A1
Barnsley	A
Barrow-in-Furness	A
Barrow-upon-Soar R.D. (exc. Thrussington A2)	A
Barry	A
Basford R.D. (exc. Willough-by-on-the-Wolds A2)	A
Basingstoke	A1
Bath	A
Batley	A
Baxterley	A1
Beaconsfield & District	A1
Beamish	A
Bearl	A
Bearpark	A
Beccles	A2
Bedale R.D.	A
Bedford	A
Bedlington	A
Bedwas	A
Beeston & Stapleford U.D.	A
Belper U.D.	A
Belton	A
Berkhamsted	A
Berrington	A1
Berwick District	A
Beverley	A
Bexhill-on-Sea	A2
Biggleswade	A2
Billericay	A
Billing	A
Billingham U.D.	A
Bilsthorpe	A
Birchington	A2
Birkenhead	*
Birmingham C.B.	†A
Bishop Auckland	A
Bishop's Stortford	A
Bispham	A
Blackburn	A
Blackpool	A
Blackwell R.D.	A
Blaydon U.D.	A
Blidworth	A
Blyth	A
Bognor Regis	A2
Boldon U.D.	A
Bolsover U.D.	A
Bolton	A
Bourne End	A1
Bournemouth District	A
Bracknell	A2
Bradford	A
Bradford-on-Avon	A2
Braintree	A1
Breconshire, County of...	‡A2
Brent Knoll	A2
Brentwood	A
Bridlington	A
Brierfield	A
Brighouse	A
Brighton	A
Bristol	A
Broadstairs	A2
Bromsgrove U.D.	A
Brough	A
Broughton (Cheshire)	A
Buckley	A
Bungay	A2
Burnham-on-Crouch	A2
Burnley	A
Burton-on-Trent C.B.	A
Bury	A
Bury St. Edmunds	A1
Buxton	A
Byfleet	A1
Calder Valley	A
Cambridge	A
Cannock U.D.	A
Canterbury	A2
Cardiff	A
Cardiganshire, County of	‡A2
Carlisle	A
Carmarthenshire, Cnty of	‡A2
Carnarvonshire, Cnty. of	‡A3
Carnforth	A
Castleford	A
Caterham	A
Chapel-en-le-Frith	A
Charmy Down	A
Chatham & District	A1
Cheadle (Staffs) R.D.	A
Chelmsford	A
Cheltenham	A
Chepstow	A1
Chertsey	A
Chester	A
Chesterfield M.B.	A
Chesterfield R.D.	A
Chester-le-Street U.D.	A
Chichester	A2
Chippenham (inc. Chippen-ham Within and Harden-huish	A2
Chorley	A
Clacton	A1
Cleethorpes	A
Clevedon	A1
Cleveleys	A
Clitheroe	A
Coalville U.D.	A
Cobham (Surrey)	A
Colchester	A
Colne	A
Colwyn Bay	A1
Congleton	A1
Consett	A
Conway	A1
Cornwall, County of	‡A2
Coventry C.B.	A
Cranbrook	A2
Cranleigh	A2
Crawley (Sussex)	A2
Crewe	A
Cromer	A1
Crowborough	A2
Cuckfield	A2
Dalton-in-Furness	A
Darlington District	A
Darwen	A
Deal	A2
Denbigh Town	A2
Derby C.B.	A
Devizes	A2
Devon, County of	‡A2
Dewsbury	A
Didcot	A2
Diss	A2
Doncaster C.B.	A
Dorking	A
Dorset, County of (except-ing Poole, Swanage and Wimborne A1)	A2
Dover	A2
Dovercourt	A
Driffield U.D.	A1
Droitwich M.B.	A1
Dudley M.B.	A
Dunstable	A
Durham City	A
Eastbourne	A1
E. Glam. & Mon. Val.	A
East Grinstead District	A2
Eastwood (Notts.) U.D.	A
Ebbw Vale & District	A
Edenbridge	A2
Ely	A2
Epping	A
Exeter	A
Fakenham	A2
Falmouth	A2
Fareham	A
Faversham	A2
Felixstowe	A1
Filey U.D.	A
Fleetwood	A
Flint	A
Folkestone	A2
Frinton	A1
Frome	A1
Gainsborough U.D.	A
Gateshead	A
Gillingham (Kent)	A1
Glossop	A
Gloucester	A
Gloucestershire, Cnty. of	‡A2
Godalming	A2
Goole M.B.	A
Gosport	A
Grantham M.B.	A
Gravesend	A
Great Yarmouth	A
Grimsby C.B. & R.D.(part)	A
Grimsby R.D. (remainder)	A2
Guildford District	A2
Guilsborough	A1
Guiseley	A
Halesowen M.B.	A
Halifax	A
Halstead	A2
Haresfield	A1
Harlow	A
Harpenden	A
Harrogate	A
Hartlepool	A
Harwich	A
Haslemere	A2
Hastings	A2
Hatfield (Herts.)	A
Haywards Heath	A2
Hemel Hempstead	A
Henley-on-Thames	A2
Hereford	A2
Herefordshire, Cnty. of	‡A2
Herne Bay	A2
Hertford	A
Hexham U.D.	A
Heysham	A
High Wycombe	A1
Highworth	A2
Hinckley U.D.	A
Hitchin	A
Hoddesdon	A
Horley	A2
Horsham	A2
Horwich	A
Huddersfield	A
Hull	A
Hunstanton	A2
Huntingdon (Staffs)	A
Ilkley	A
Ingatestone	A1
Ipswich	A
Isle of Sheppey	A2
Isle of Thanet	A2
Isle of Wight	A2
Jarrow M.B.	A
Keighley	A
Kendal	A
Kenilworth U.D.	A
Kettering M.B.	A
Keynsham	A
Kidderminster M.B.	A
King's Lynn	A1
Kingskerswell	A1
Kingsteignton	A1
Kirkham	A
Knaresborough U.D.	A
Knowle	A1
Lancaster	A
Leamington M. B.	A
Leatherhead	A
Leeds	A
Leicester C.B.	A
Leighton Buzzard	A1
Letchworth	A1
Lewes	A2
Lichfield M.B.	A
Lincoln C.B.	A
Littlehampton	A2
Liverpool	*
Llandudno	A1
Llanelly	A
London	*
Long Eaton	A
Loughborough M.B.	A
Louth M.B.	A2
Lowestoft	A
Loxton	A2
Luton	A
Lyneham (Devon)	A2
Macclesfield	A
Maidenhead	A1
Maidstone	A1
Maltby	A
Maldon (Essex)	A1
Malvern U.D.	A1
Manchester	A
Manningtree	A1
Mansfield M.B.	A
March	A2
Margate	A2
Market Harborough U.D.	A
Maryport	A
Matlock U.D.	A1
Melksham	A2
Melton Constable	A2
Melton Mowbray U.D.	A1
Merthyr	A
Middlesbrough	A
Middleton	A
Middlewich	A
Milford Haven	A1
Morecambe	A
Morley	A
Mundesley	A2
Nantwich	A
Nelson	A
Newark-on-Trent R.D.	A1
Newbury	A2
Newcastle-on-Tyne	A
Newcastle-under-Lyme	A
New Forest District	A1
Newmarket	A1
Newport, Mon.	A
Newport Pagnell	A2
Newton Abbot	A1
Northallerton Dist.	A
Northampton C.B.	A
North Shields	A
Norton Radstock	A1
Norwich	A
Nottingham C.B.	A
Nuneaton M.B.	A
Oakham U.D.	A2
Oldham	A
Ongar	A
Ormskirk	A
Ossett and Horbury	A
Oxford	A
Oxted	A1
Paignton	A1
Peterborough	A
Soke	A1
Pickering	A3
Plymouth	A
Pontefract	A
Pontypridd District	A
Portishead	A
Portland Stoneyards	A
Portsmouth	A
Port Talbot	A
Preston	A
Pudsey	A
Pulborough	A2
Radnorshire, County of	‡A2
Ramsgate	A2
Rayleigh	A
Reading	A
Redcar B.	A
Redditch U.D.	A
Redhill and Reigate	A
Ripon	A3
Rochdale	A
Rochester	A1
Rotherham	A
Rugby M.B.	A
Saffron Walden	A2
St. Albans	A
St. Helens	A
St. Neots	A2
Salisbury City	A2
Salisbury Plain	A2
Sawbridgeworth	A
Saxmundham	A2
Scarborough	A
Scunthorpe	A
Selby	A
Sevenoaks	A1
Sheerness	A2
Sheffield	A
Shipley	A
Shoeburyness	A
Shoreham	A
Shrewsbury M.B.	A
Sittingbourne	A2
Skegness U.D.	A1
Skipton U.D.	A
Sleaford U.D.	A2
Slough	A1
Smethwick C.B.	†A
Snettisham	A2
Somerset, County of	‡A2
Southampton	A
Southend-on-Sea Dist.	A
Southport	A
South Shields C.B.	A
Spalding U.D.	A2
Stafford M.B.	A
Staines	A
Stamford M.B.	A1
Stantonwick	A
Stevenage	A
Stockport	A
Stockton R.D.	A
Stockton-on-Tees	A
Stoke-on-Trent C.B.	A
Stoke Orchard	A1
Stourbridge M.B.	A
Stourport U.D.	A
Stowmarket	A1
Stratford-on-Avon M.B.	A
Sunderland District	A
Sunningdale	A1
Sutton Coldfield M.B.	A
Swaffham	A2
Swanage	A1
Swansea	A
Swindon	A1
Swinton U.D.	A
Tamworth M.B.	A
Tenterden	A2
Tewkesbury	A1
Thames Haven	A
Thetford	A2
Thorpe Bay	A
Thurrock U.D.C. Area	A
„ North of, to Billericay	A
Tilbury	A
Todmorden	A
Tonbridge	A1
Torquay	A1
Totnes	A1
Trowbridge	A2
Tunbridge Wells	A1
Tynemouth C.B.	A
Uppingham (Salop)	A1
Uttoxeter U.D.	A2
Wakefield	A
Wallsend B.	A
Walsall C.B.	A
Walsden	A
Walton-on-Naze	A1
Ware	A
Warminster	A2
Warrington	A
Warwick M.B.	A
Wellington U.D.	A
Wells (Norfolk)	A2
Welwyn	A
Welwyn Gar. City	A
West Bromwich C.B.	A
Westbury	A2
Westcliff-on-Sea	A
Westerham	A1
Weston-super-Mare	A1
Weybridge	A
Weymouth	A1
Whitby U.D.	A1
Whitstable and District	A2
Wickford	A
Widnes	A
Wigan	A
Wigton	A2
Willington	A
Wilmslow	A
Wilts. County of	‡A2
Winchester	A1
Windermere	A3
Windsor and Eton	A1
Wisbech	A2
Witham	A1
Woking (District)	A1
Wokingham	A2
Wolverhampton C.B.	A
Woodbridge	A2
Worcester C.B.	A
Workington	A
Worksop M.B.	A
Worthing	A2
Wrexham (incl. Cefn)	A
Wroughton	A1
Wylam	A
Wymondham	A2
York	A

*For Birkenhead, Liverpool and London the rates are:—Craftsmen, 3s. 10½d.; Labourers, 3s. 5d. In the case of London the rate beyond the 12-mile radius is:—Craftsmen, 3s. 10d.; Labourers, 3s. 4½d. † Plus 2d. per working day. ‡ This is the County rate and applies except where higher grades are stated.

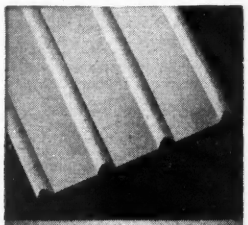
NOTE.—Carpenters, Joiners and Plumbers in all towns and districts receive 2d. per day Tool Allowances.

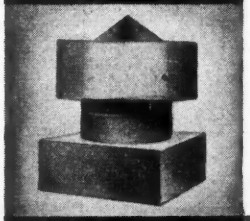
WOMEN'S RATES.—In all districts throughout the country the rate of wages for women engaged in craft processes is 2s. 8d. per hour. Women introduced to carry out work other than craft processes, 2s. 4d. per hour.

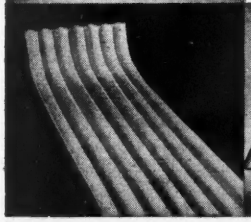
For Building Trade Wages in Scotland see page 323

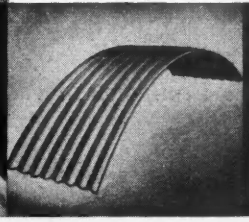
ATLAS

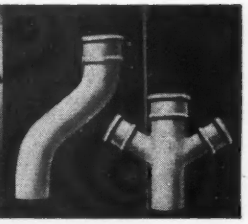
ASBESTOS CEMENT ROOFING MATERIALS











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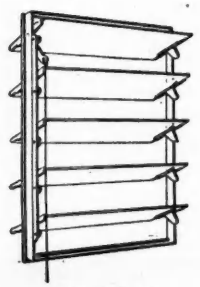
ATLAS STONE CO. LTD.

Artillery House, Artillery Row,
London, S.W.1 *(Tel: ABBey 3081-2-3-4)*

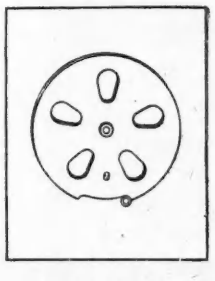
Works at Meldreth, Greenhithe, Strood, Cambridge, Park Royal (London), Rye, Shorne and Wing.

PUGH

for GLASS ventilators



LOUVRE TYPE



CIRCULAR TYPE

Glass Ventilation in Factory, Home and Office

PUGH BROS. LTD., 20/23 GREVILLE STREET, LONDON, E.C.1. Telephone: CHAncery 5211

WORKING RULE AGREEMENT

Constitutional Amendments

THE National Joint Council for the Building Industry have made constitutional amendments in respect of certain sections of the National Working Rule Agreement which will operate with effect on and from October 4, 1954. We reproduce below the Council's notice referring to the amendments:—

The National Joint Council at its statutory meeting on January 14, 1954, considered the terms of (i) a Constitutional Amendment Notice submitted by the National Federation of Building Trades Employers, having for its object a re-wording of National Working Rule 3A(m), and (ii) a Constitutional Amendment Notice submitted by the Operative Adherent Bodies having for its object additions to the Schedule of Extra payments specified in National Working Rule 3B.—Continuous Extra Skill or Responsibility.

At its meeting on April 29, 1954, the Council received a report and recommendations from its general purposes committee to whom the proposals had been referred for detailed examination.

The Council accepted the committee's recommendations and it was decided that constitutional amendments should be made amending the relevant sections of the Rules to read as follows:—*(i) National Working Rule 3A(m)* No. in London WRA, 3A(q).—"Labourers when using in the course of their normal work mechanically-driven compressed air or percussive drills, picks or spades, rammers, tampers or hammers . . . 1d. per hour." *(ii) National Working Rule 3B—Continuous Extra Skill or Responsibility.—Delete* existing Schedule of Extra Payments and *Insert*:—

		Above Labourers' Rate per hour	*No. in London WRA*
*(a)	Timberman, recognised as such (but see 3A above)	1d.	3B (*i*)
*(b)	Well-sinker, recognised as such ...	1d.	(*j*)
*(c)	Scaffolder engaged and employed whole-time as such (but see provision in Section C for intermittent scaffolding work)	2d.	(*g*)
	MECHANICAL PLANT		
(*d*)	COMPRESSORS Diesel (portable) or petrol air-compressing machine: Driver of	2d.	
(*e*)	CRANES i. Power-driven travelling crane and overhead traveller: Driver of	4d.	
	ii. Banksman appointed to attend crane and to be responsible for fastening or slinging loads and generally to direct crane-driver	1d.	
	iii. Power-driven Hoist and Crane up to and including 2-tons capacity: Driver of	2d.	
	iv. Self-propelled Mobile Crane on road wheels or caterpillar tracks: Capacity over 30 cwts. and up to and including 2-tons: Driver of	3d.	
	v. Do. capacity over 2 tons and up to and including 5 tons: Driver of	4d.	
	vi. Do. capacity over 5 tons: Driver of	5d.	
(*f*)	DERRICKS Power-driven Derrick: Driver of	5d.	
(*g*)	DUMPERS i. Dumper up to and including 1 cu. yd. rated capacity: Driver of	1d.	
	ii. Dumper over 1 cu. yd. and up to and including 5 cu. yds. rated capacity: Driver of ...	2d.	
	iii. Dumper over 5 cu. yds. and up to but excluding 12 cu. yds. rated capacity: Driver of ...	3½d.	
	iv. Dumper 12 cu. yds. rated capacity and over: Driver of	5d.	
(*h*)	EXCAVATORS *i. Excavator with rated capacity up to and including 1¼ cu. yds.: Driver of	5d.	3B (*n*)(i)
	*ii. Excavator over 1¼ cu. yds. capacity: Driver of ...	6d.	(*n*)(ii)
(*j*)	MAINTENANCE FITTERS *i. Maintenance Fitter employed whole-time as such ...	5d.	(*k*)
	*ii. Maintenance Fitter's Mate employed whole-time as such	1d.	(*l*)
	*iii. Greaser on site employed whole - time on servicing machinery	2d.	(*m*)
(*k*)	PILING *i. Pile-Driver Charge Hand ...	3d.	(*o*)(i)
	*ii. Ladderman	2d.	(*o*)(ii)
	*iii. Gang	¼d.	(*o*)(iii)
	iv. Hammer-man on automatic or semi-automatic hammers or extractors	2d.	
	v. Topman while working on Pile-frame	2d.	
	vi. Pile-frame Winch Driver ...	3d.	3C(*f*)
(*l*)	PUMPS Power-driven Pump: Attendant of	2d.	
(*m*)	ROAD ROLLERS i. Power-Roller up to but not including 5 tons: Driver of ...	2d.	
	ii. Do. 5 tons and upwards...	4d.	
(*n*)	SCRAPERS Scraper of Koehring or similar type: Driver of	5d.	
(*o*)	SHOVELS Chaseside or similar shovels: Operators of	2d.	
(*p*)	TRACTORS i. Calfdozer: Driver of... ...	2d.	
	ii. Small Tractor, wheeled - type: Driver of	2d.	
	iii. Track-type Tractor, irrespective of make or horse-power: Driver of	5d.	
*(*q*)	WINCHES Power-driven Winch: operator of	2d.	3B(*p*)
(*r*)	BARROWS (MECHANICAL) Mechanical Barrow: Operator of	1d.	
(*s*)	ELEVATORS Mechanical Elevator: Operator of	2d.	

The adherent bodies having declared their ratification of these constitutional amendments the procedure committee hereby promulgates the decisions to operate with effect on and from Monday, October 4, 1954.

The LMBA point out, in their Information Bulletin, that for those items above marked with an asterisk there is no change from the rates of payment as shown in the current London Working Rule Agreement. The note in the right-hand margin refers to the corresponding number under which these items appear in the London Working Rule Agreement.

TOWARDS LOWER COSTS

The Merchants' Contribution

THE question of the contribution which builders' merchants could make towards the achievement of lower costs in building, was raised at a meeting called by the Building Industry Distributors in London on Tuesday (August 17). MR. E. M. TATLOW, president, said that BID would welcome the opportunity to make suggestions on this and various other problems with which the industry was confronted at the present time.

He felt that in many instances when his organisation had ideas and suggestions to put forward, they were not called upon to take part in the consultations. "It is a misconception," he said, "to believe that builders' merchants have nothing to contribute towards the solution of current problems. They could frequently offer useful advice."

STANDARDISATION

He believed that the biggest single factor which would lead to a reduction of building costs would be to secure a greater degree of standardisation of materials.

Mr. Tatlow was asked about the possibility of manufacturers and merchants being able to quote firm prices for materials so as to encourage contractors to abolish or restrict the use of the rise and fall clause in their contracts. In reply, he said: "Everyone would be happy to be rid of the rise and fall clause, but I have every sympathy with the manufacturers whose production costs are always rising. There would have to be a stabilisation in such important items as the level of wages, the price of coal and the cost of transport before we could expect prices of materials to remain at a more constant level."

He added that the list of items subject to the rise and fall clause was gradually diminishing, which was a good sign. At present there were fewer items subject to the clause than there were a few years ago. Often, the benefits from increased output and improved efficiency were lost before the goods reached the consumers.

PRESTIGE ADVERTISING

Earlier in the proceedings it was stated that the purpose of the meeting was to announce the launching by BID of a "prestige advertising campaign," the purpose of which was to make more generally known the work of BID, its aims and objects. It was stated that £5,000 was to be spent on advertising in the current year.

Mr. Tatlow said that BID was formed in 1942 by the amalgamation of four organisations which for many years previously had represented various groups of merchants in different parts of the country interested in the distribution of building materials. It was a nation-wide organisation with 1,500 members, whose size and activities varied to a marked degree, but the function of all was the supplying of building materials to the building trade. Collectively, its members dealt in practically every article of the many thousands which go into the making of any building.

MR. W. T. CLEGG, chairman of BID's publicity committee, who also spoke of the work of the builders' merchants, said: "The distributive trades have never received the credit they deserve for the services which they render. It is only too popular in some quarters to regard distributors, particularly wholesalers, as parasites on the industrial system, forgetting that consumer goods are useless until they reach the consumer for whom they are made, and who may be hundreds of miles away; and getting them there is a highly specialised assembly and transport job that the manufacturer is quite unable to tackle himself."

When payment for the merchants' services had been added to transport and storage costs his organisation was still the cheapest, quickest and best form of distribution of building materials and fitments, he added.

"MONOPOLIES NOT EVIL"

It was also announced at the meeting that BID is to ask the Government to hold an inquiry "in the national interest" into certain "assumptions" of the Monopolies and Restrictive Practices Commission. Mr. Clegg defined these "assumptions" as (1) That monopoly is, in itself, an evil; (2) that price maintenance is not to the public benefit; and (3) that restrictions imposed by trade associations on their members are necessarily bad. "We think these premises want challenging," he said.

BUILDING SURVEYORS' INSTITUTE

The Building Surveyors' Institute, Temple Bar House, 227, Strand, WC2, point out that the designation for a corporate member of the Institute, i.e., a Fellow or an Associte, will be, from September 1, F. or A. Bldg., S.I. respectively, and not as stated in our issue of August 6.

OVERSEAS BUILDING

[*From Our Own Correspondents*]

Benelux.—The special Benelux Committee set up under the joint chairmanship of M. Van Cauwelaert, of Belgium, and M. Steenberghe, of the Netherlands, to examine Benelux waterway problems has submitted its recommendations to the Belgian and Netherlands Governments. The recommendations fall into three headings and entail much construction work. Elimination of the Lanaye bottleneck is advocated; construction of a new lock at Terneuzen on the south bank of the western Scheldt is advised, as well as the widening of the Terneuzen-Ghent canal. The biggest task is the proposed construction of a direct canal from Antwerp to Moerdijk on the Hollands Diep to afford Belgian barge traffic a safer route to the Rhine than the existing devious route by canal across the Dutch Island of South Beveland.

Burma.—Foundations have been laid for two projects in Burma, namely, the Polytechnic and the State Agricultural Institute. The architects for these projects are Raglan Squire and Partners, of London. A jute mill is to be built in the north-east of Rangoon. Sugar factories are to be erected at Pyinmana and Namti. British firms are being considered for the projects.

Canada.—Schools are to be built at Winterburn, Drayton Valley, Holborn, Duffield, Koophills, Tomahawks, Seba Beach and Entwhistle in Alberta, Canada. Planning these educational extensions are architects Campbell-Hope and Associates of Edmonton who have been appointed by the authority, the Stony Plain School Division of Alberta Province. . . . To commemorate Alberta's 50th anniversary next year, civic auditoria are to be erected at Calgary and Edmonton at a cost of $1,250,000 each. The contracts will be handed out by the provincial Government's Department of Public Works at Edmonton. . . . In Calgary, plans are now being studied for the new Roman Catholic cathedral on 18th Avenue. Cost will be around $1,000,000. The architects are Hodges and Bates, who are well known in Calgary. The cathedral will be called St. Mary's . . . Another well-known firm of architects in Calgary, Stevenson and Dewar, have been appointed by the Imperial Oil Company to design a new laboratory building. Estimated cost is $350,000 and the builders are Bennett and White, Ltd. . . . A $30,000,000 pulp and paper project is envisaged by the North Western Pulp and Paper Company, Ltd. The site is at Edson, also in Alberta. . . . The Calgary Power Company is negotiating with the Alberta Provincial Government for permission to construct a $3,250,000 dam on the Kananaskis River about 50 miles from the town. Planned for the same scheme is a $600,000 power house which will probably be built at Interlakes between the upper and lower Kananaskis Lakes. The generators when ready will develop 7,000 h.p.

The Dominion Government at Ottawa is contemplating the construction of a Federal building at Drummondville in the Province of Quebec at a cost of $500,000. About $300,000 is also to be spent in the same town on a new school. . . . Nine hundred and fifty dwellings are to be constructed at Jacques Cartier by three companies. Harmony Homes Inc. are to build 250 dwellings, and Taylor, Coates Development, Ltd., and Robert Thiberg, Ltd., are to build 350 dwellings each. Harmony Homes Inc. have already appointed their architects—Reuben Fisher Inc., of Montreal. Total cost is said to be in the region of $10,000,000.

In the neighbouring province of Ontario a number of interesting projects are in hand. The De Havilland Aircraft Company of Canada, for example, are to build a large warehouse at Downsview. Shepherd and Powell Inc., of Toronto, have been appointed as consulting engineers. . . . At Hamilton, Ontario, a super-market is being designed for the growing population by Dominion Stores, Ltd. There are also plans in operation for a Greater Hamilton Shopping Centre and Principal Investments, Ltd., Toronto, are to invest $400,000 on a new shopping centre for James Avenue. . . . In Toronto a $6,000,000 residential and shopping centre is to be constructed by Hiscock, Durno and Dinsmore of the same town. A 100-acre tract of land has been purchased at the corner of Markham Road and Lawrence Avenue East. Residential construction is not to begin until late spring. . . . A $14,000,000 brewery is to be built at Etobicoke, Ontario, by Canadian Breweries, Ltd., of Ontario. So far no concrete plans, apart from the actual construction announcement, have been made known. . . . The Highbury Development Company have announced the purchase of a 900-acre tract of land in the province for industrial and commercial development. . . . A steam generating plant is to be erected in the near future at Brandon, Manitoba, by the Manitoba Hydro-Electric Board. This is part of the Board's programme to develop new power sources in the province. Mr. James R. Rettie, the engineer employed by the Board for the project, announced recently that a 250-acre site had been purchased east of the city. . . . At Winnipeg, in the same province, a large departmental store is being planned by Simpsons-Sears, Ltd., of Toronto, at a cost of $5,000,000. . . The British Columbia Electric Company, of Vancouver, is to build a 6-storey office building in Victoria. Sharp and Thompson, of Victoria, Vancouver Island, are the architects.

Chile.—More than 60 firms are reported to be interested in competing for the Chilean contract for the construction of the Santiago underground railway. The firm to whom the contract is awarded will be obliged to extend a loan sufficient to cover the cost of the project . . . . An agreement for a co-operative building programme was signed recently between Chile and the Government of the United States of America. The United States is to contribute dollars for the importation of machinery and equipment to assist the sponsors, the Corporacion de la Vivienda (Housing Corporation), in carrying out its programme. The Chilean Government is similarly to contribute a large sum of money to the scheme. . . . The Government has also approved a Development Corporation scheme for the installation of a hydro-electric plant at Antofagasta with a capacity of 1,300 kW. and at a cost of 43,000,000 Chilean dollars. Companies offering excavations for the water works to instal this new undertaking will receive preferential treatment.

Ecuador.—It is reported in a recent economic and commercial survey that Ecuador is well worth the attention of UK exporters of goods and services. The report —"Overseas Economic Surveys: Ecuador, 1954"—is published by HMSO, price 2s. It is the latest volume in the series of overseas economic surveys issued by the Commercial Relations and Exports Department of the Board of Trade.

Ecuador, says the survey, has not really entered into the age of modern American development; it stands on the threshold. The market is one for which Germany, the United States and latterly Japan are competing strongly. Keen prices are a prime factor and credit terms important. UK goods have, on the whole, a high reputation in Ecuador, and a useful potential field for British enterprise is provided by Government contracts.

During 1953, out of a total of UK exports to Ecuador amounting to over £1.75m., some £1.5m. (or about 90 per cent.) consisted of wholly or partly manufactured goods. Principal items included zinc sheet and galvanised iron.

The 45-page survey has facts and figures on Ecuador's finance, trade, natural resources, industry, transport and communications, legislation and taxation, and social conditions.

Egypt.—The programme of new hospitals, social centres and water supply proposed by the Egyptian Government (our issue July 30) is being sponsored by the National Production Corporation. Firms interested should write to the Secretary-General of the Corporation, Cairo, Egypt.

Greece.—The Greek Co-ordinating Council announced recently that the tenders offered by various companies for the construction of an oil refinery have all been rejected, being "disadvantageous to the Greek State and not providing any certainty of a safe and proper execution of the project." The Government has decided to separate the question of construction from that of operation and is now to consider the best method of construction for the plant.

A contract was signed in Paris recently

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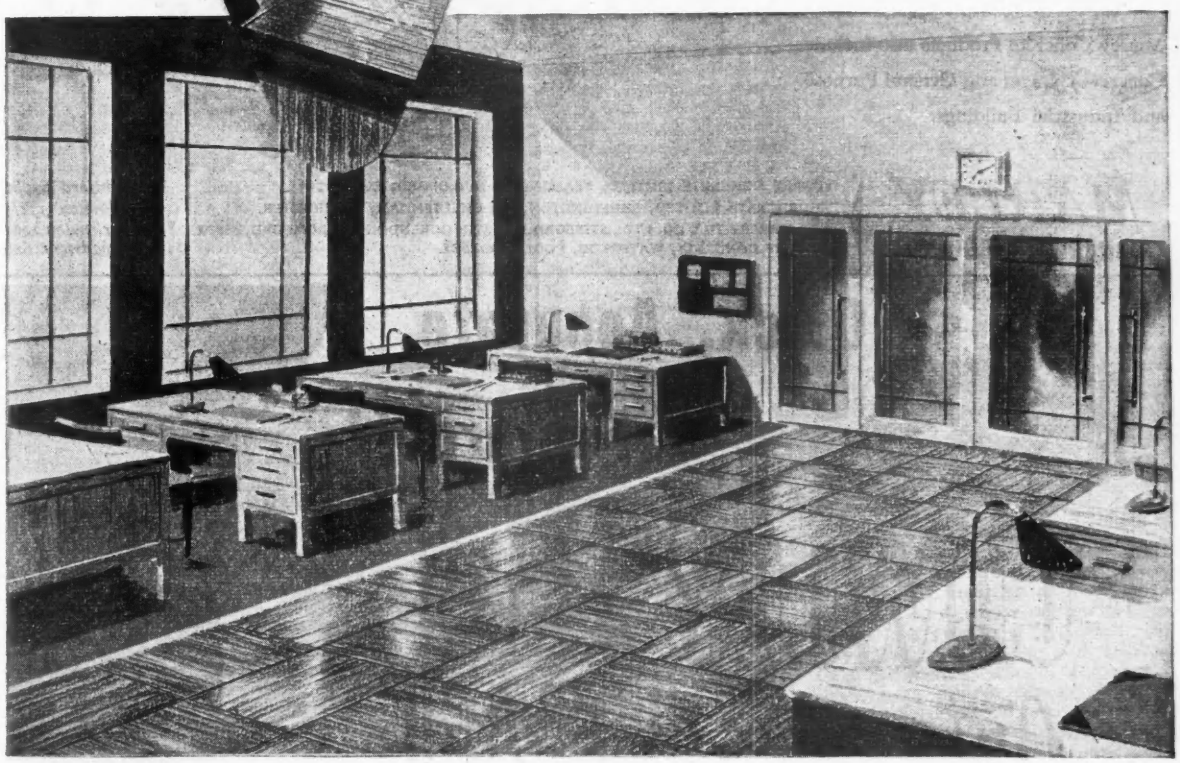

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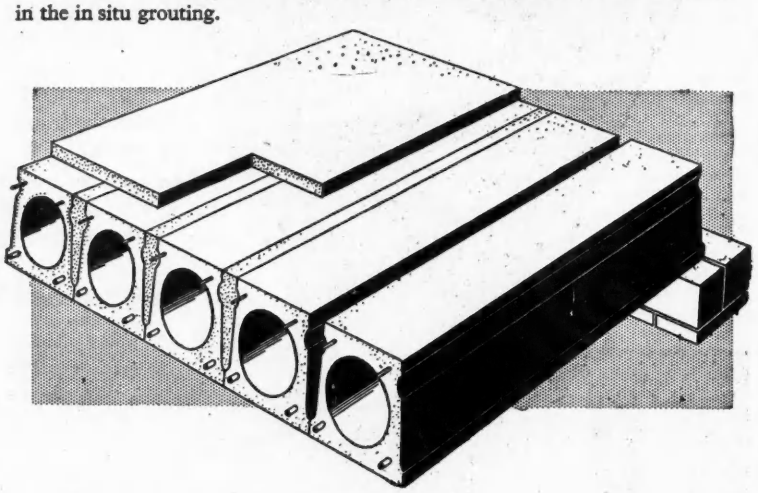

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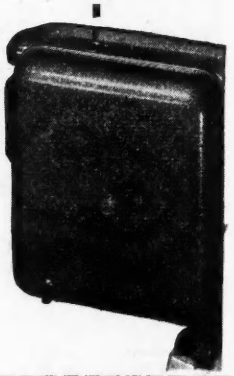

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between representatives of the Greek Government and the French firm "Omnium Lyonnais" for the construction of the Megdova hydro-electric project. Total expenditure is expected to exceed £4m.

The Minister of Co-ordination announced that the Public Power Corporation has awarded the contract for a 150,000 volt transmission line from Agra to Larissa to the Italian company SAE. This will connect the northern and southern sections of the national grid. The line will be 160 kilometres in length and work will start shortly.

It has been announced in the Press that four factories for tinning green olives, mainly for export to the United States, are to be established. Their over-all capacity will be 3,300 tons. They will be established in Velos, Stylis, Amfissa and Agrinion. The Agricultural Bank, which is shortly calling for tenders, has information regarding these schemes which will be of use to intending suppliers and contractors.

The Currency Committee has now approved the import of 200,000 dollars to build a condensed milk factory in Athens. The sponsors of this project are believed to be a group of Greek Americans and the equipment is to be imported from the USA. The Greek company has been registered as "Agnon."

Hong Kong.—The Hong Kong Legislative Council has approved the plan for development of Hong Kong Airport at an estimated cost of £6,225,000. About half of this sum is to come from H.M. Government as an interest-free loan. The scheme provides for a single runway out to the sea on reclaimed land pointing towards the gap in surrounding hills known at Lyemun Gap. It is believed that help will be invited from British firms.

A revised design has been exhibited for the proposed City Hall. It is said to bear a resemblance to the United Nations Building in New York. One section is to be 12 storeys high. Cost is estimated at just over £1,000,000. About 10 per cent. of this sum will be spent on air-conditioning plant which is to be used to cool the tall block by day and the rest of the building, including the concert halls, by night. If the building is approved this should provide a good opportunity for UK air-conditioning equipment. At this stage the Hong Kong Government would be the best source to approach for technical details.

India.—A huge building programme is likely to be undertaken in Tirupathi, Madras, India, following a decision to found the Sri Venkateswara University. A two-man committee has made the necessary recommendations for the starting of the University. The University will comprise office buildings, library buildings, hostel for 500 students, quarters for teaching staff, quarters for ministerial staff, canteen and club. The Madras Council have details of this scheme.

Madras City Council also has a scheme in hand for the construction of 963 flats. A multi-storey office building is to be built on King Edward-road, New Delhi, by the Indian Government. Construction will be started soon by the Central Public Works Department.

Indonesia.—Speaking at a recent Press conference the Mayor of Greater Djakarta reviewed the progress of municipal projects and said that a 15-point programme of town planning and development, drafted by the Djakarta Administration in 1953, was now being put into effect. Some Rp. 1,052,000 have been allocated for its initial stages and the first districts in which improvements are scheduled to be made are Kebon Katjang, Kp. Bali, Bukit Duri and Utan Pandjang.

To help relieve housing shortage the Municipal Building Foundation has constructed 260 houses at Grogol since 1951, and 304 small houses are now being built for sale. The State Industrial Bank (Bank Industri Negara) is due to start building 900 houses for civil servants and 100 houses for other families in the near future. These houses also will be in Grogol.

Pending the completion of the water purification installations at Pedjompongan, which are expected to be ready within two years at a cost of about Rp. 70m., special wells are being sunk at ten places in Djakarta to alleviate the present water shortage.

During 1954 100 primary schoolrooms are being built. Special paths are being constructed in the roads for cycle-taxis, bicycles and pedestrians to reduce the number of accidents. Market places have been completed on most of the 11 scheduled sites and district community centres have been or are being set up throughout Djakarta.

New Zealand.—Plans for the new Wellington Cathedral, New Zealand, are now ready, and tenders will be called for later this year. Work is expected to begin in January. According to the Primate of New Zealand, Archbishop Owen, the number of bays in the great nave will depend on what additional money is given to the cathedral during the next two years. . . . The Government hotel at Milford Sound, which was damaged by fire early in 1952, will reopen in late November. The hotel has been rebuilt and refurnished on modern lines, and according to the Tourist Department will be one of the best-equipped hotels catering for overseas visitors. The Department is now considering plans for other hotels.

Details of the group housing scheme, since it started in November last year, have now been given by the Minister of Housing. Under the scheme, 223 builders have finished or are erecting 3,300 houses in 40 cities and towns, and at least one-third of the houses have already been sold. The largest number of builders under the scheme is in Wellington, where 850 houses are being erected by 28 builders. In Auckland, 21 builders are erecting some 980 houses; in Christchurch there are 22 builders, with 350 houses; in Dunedin, 12 builders are providing 104 houses, and in Palmerston North, 137 houses are being erected by 12 builders. Provided the houses are built according to standard specifications, the Government guarantees to buy from the builders any dwellings which they are unable to sell themselves. Builders who wish to build houses for their workers are given special encouragement. If the houses are for rental to employees, the employers may claim a special depreciation allowance of 30 per cent. for income tax purposes in the first year. They may obtain mortgage finance from the State Advances Corporation, or from private lending institutions, under the Government's mortgage guarantee scheme.

New Zealand.—The Government is to call for tenders for building a departmental building at Auckland to cost £1m. If a satisfactory tender is received, work will begin before December. The building, of reinforced concrete, will have 10 floors and a basement.

Norway.—King Haakon will lay the foundation stone of Oslo's Central Institute for Poliomyelitis on August 25 next. The Institute will cost almost £300,000 to build. A number of other poliomyelitis institutes are being built in Norway. At Trondheim preparations have been completed to build an institute as soon as a licence has been obtained. . . . The Town Planning Committee in Trondheim has asked the city's planning director to consider the building of a helidrome for helicopters near the city's central hospital. . . . Work on the construction of the Royal Norwegian Navy's new base headquarters, Hakonsvern, at Mathopen, near Bergen, West Norway, will start next spring. In the first phase of the work priority will be given to under-mountain installations. . . . Norway's biggest training school for fishermen has just been completed at Honningsvag, North Norway. The building cost £115,000.

Pakistan.—The Pakistan Government has decided that consulting engineers shall be appointed to undertake engineering of major thermal and hydro-electric projects. So far they have appointed Messrs. H. G. Acres, a Canadian firm, as consulting engineers for the Warsak project, Messrs. International Engineering Co. a US firm, for the Karnaphuli multi-purpose project, and Messrs. Brian Colquhoun, of London, for the Karachi power station. Negotiations are in preparation for the appointment of Messrs. Merz and McLellan for the Hyderabad power station. Messrs. H. G. Acres have also been engaged to prepare a power development plan of West Pakistan on the basis of the revised power requirements, and Messrs. International Engineering Co. are to prepare a similar plan for East Pakistan. The Italian firm, Messrs. Montecatini, has been engaged to prepare a project report for the gas pipeline north of Sui which is to feed a central power station in the South Punjab. The Pakistan Industrial Development Corporation has been authorised to undertake this work.

Turkey.—The lowest bid of 11,119,280 dollars, from among those submitted by 22

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Turkish and foreign contractors on July 15, won for the French firm of Societe de Construction des Bolignolles the contract for additional port facilities to be provided at Alsancak, Izmir, on Turkey's Aegean coastline. To be ready for operation in 30 months and completely finished in three years, the work includes construction of one 2,265-foot pier for the simultaneous accommodation of four 10,000-ton vessels, one 798-foot quay for the berthing of two 4,000-ton vessels, and transit warehouse facilities totalling 14,370 sq. feet of floor space.

* *USA.*—Mr. George Egee, trading as Kismet Inc, 1232, Hibernia Bank-buildings, New Orleans 12, Louisiana, USA, would like to find a UK source of supply of Portland grey building cement in 100-lb. paper bags.

Manufacturers interested in this inquiry should write by air-mail to Mr. Egee giving full particulars of their products and quoting prices in US dollars, preferably cif or c and f New Orleans, although fob quotations would be acceptable. Mr. Egee is interested in direct supply. Telephone inquiries to Chancery 4411, Ext. 776, quoting ref. ESB/13789/54.

* *USA.*—Mr. Neiberding, principal of the Twin Supply and Service Co., 2406, N. Charles-street, Baltimore, USA, is interested in farm buildings for storage purposes. He stated that there is a demand for prefabricated buildings of this type—for new buildings and for replacements. Provided prices compare favourably with United States prices for buildings of this type they would be prepared to represent a UK manufacturer.

Three illustrated leaflets showing the types of farm buildings in which the Twin Supply and Service Co. are particularly interested are available for inspection in Room 805 of the Export Services Branch, BoT, Lacon House, Theobalds-road, WC1.

Manufacturers interested in this inquiry are invited to send, by air-mail, illustrated literature and price lists in US dollars, cif Baltimore, direct to the Twin Supply and Service Co. Inquiries by telephone should be made to Chancery 4411, Ext. 776, quoting ref. ESB/19312/54.

CLIMATE ATLAS OF CANADA

The Division of Building Research, National Research Council, and the Meteorological Division, Department of Transport, Canada, have jointly prepared a new Climatological Atlas of Canada as a supplement to the climate section of the revised National Building Code, 1953. The atlas contains 82 charts and tables which have been grouped into nine sections: temperature, humidity, wind, snow, rain, sunshine and insolation, seismological disturbances, permafrost and hythergraphs. It should prove of value to British manufacturers of prefabricated buildings and components for export to Canada, for a glance at the charts helps to bring home the great differences between summer and winter temperatures in that country and the extreme severity, by our standards, of the winter in all except the coastal regions, that buildings have to be designed to withstand. Inquiries regarding the atlas (which is priced at $2) should be addressed to The Director, Division of Building Research, National Research Council, Ottawa, Ontario.

* From the Board of Trade Special Register Information Service.

OFFICIAL NOTIFICATIONS

Marking of Imported Wire Goods: BoT Inquiry

THE STANDING COMMITTEE appointed by the Board of Trade will hold a public inquiry at the Board of Trade Offices, Horse Guards-avenue London, SW1, on November 17 at 10.30 a.m. and, if necessary, on November 18 to consider whether imported wire goods used for domestic and catering purposes should be required to bear an indication of origin.

The Board of Trade announced on April 8 last, that it had been asked to recommend the making of an Order-in-Council on this subject and had referred the request to the Standing Committee.

Communications regarding the inquiry should be addressed to the Secretary, Merchandise Marks Committee, BoT, Horse Guards-avenue, SW1.

This inquiry was to have been held originally on August 19 and 20.

Coloured Sheet Glass

THE BOARD OF TRADE are considering an application for an increased protective duty on (i) flashed sheet glass consisting of a layer of coloured or opal glass on a base of clear glass; and (ii) sheet glass of the kinds commonly known as signal green, signal yellow, and pot opal or solid opal. Any representations which interested parties may wish to make in regard to this application should be addressed, in writing, to the Board of Trade, Industries and Manufactures, Division 1, Horse Guards-avenue, Whitehall, SW1, not later than September 4.

SOLID FUEL APPLIANCES

The Coal Utilisation Council has published a new list, No. 9, of Recommended Domestic Solid Fuel Appliances, obtainable from the Council at 3, Upper Belgrave-street, London, SW1, price 6d.

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The SCOTTISH BUILDER

New Town Reports

RECORD progress has been made in Scotland's new towns—East Kilbride and Glenrothes—during the past year and has paved the way for even greater development this year.

This is shown in the reports of East Kilbride and Glenrothes Development Corporations, which were recently published by HM Stationery Office, price 2s. 6d. They cover the period April 1, 1953-March 31, 1954.

Major developments in East Kilbride during the year included the opening of the first new primary school; the achievement of the target rate of 1,000 completed houses in a year; the opening to traffic of the new north-south main road (Kingsway); the near completion of the new Hayward-Tyler, Ltd., factory; and the successful negotiation for a new industrial development which will provide an alternative employment to engineering—a factory for the production of women's wear.

The Corporation have been informed, says the report, that approval for the building of a 1,200-1,500-seat cinema will be granted. A recent survey of the tenants proved that a cinema was considered to be a most important social need in the new town.

In the course of the year, 1,008 houses were completed, compared with 458 in 1953, and 1,474 were under construction at March 31. Drainage and roads had been put in hand for 1,421 houses and flats and contracts for 1,021 houses and flats were placed, with tenders received for a further 22. The labour force engaged in housebuilding was 1,464 on March 31, compared with 1,093 a year earlier.

"The Corporation have given thought to the proportion of flats to be erected in the new town," states the report. "A ratio of one-third flats has been accepted in the past, but it has been shown that incoming tenants, who are at this stage of the town's growth mostly young married couples with growing families, much prefer houses with gardens."

The Corporation have therefore decided to reduce the proportion of flats in new layouts to 25 per cent. for a period of four or five years and to retain sites on which further flats may be provided at a later date.

The Rolls-Royce factory and test beds were completed during the summer of 1953 and officially opened in August. They now employ 3,000 workers.

There are 53 old and new shops in the town, which is also served by 20 mobile shops based on neighbouring areas. Plans have been approved to provide another 30.

Heathery Knowe Primary School, officially opened in October, has been in use since August; the Murray Primary School will be opened for use shortly. Work has commenced on the third new primary school, and the first Roman Catholic school, combined primary and secondary, at Platthorn, is due to start building this summer. The first new secondary school at Duncanrig should be completed next year.

The number of church congregations is increasing and plans have been approved for the building of a hall-church by the Church of Scotland in the Murray neighbourhood, while a Roman Catholic

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church is to be built at Platthorn.

The report states, however, that the development of the town as a balanced community depends upon a reform of the Scottish rating system.

"Under the present system," it states, "the building of larger houses for letting is out of the question, and it is difficult to obtain an economic rent from shops and other commercial and industrial buildings. Where economic rents are obtained, the tenants' outgoings are so high that higher prices tend to be charged and the public suffers. The development of the Town Centre by the Corporation or by private enterprise is going to be very difficult if the rating system remains as at present."

In Glenrothes, as in East Kilbride, progress throughout the year has been satisfactory. The population is now estimated to be about 5,000, of whom some 3,700 are new residents. Housing completions have been maintained at the rate of building set and the first community hall—in Woodside—was completed. The first church in the new town was opened in May this year and work on the second shopping centre is nearing completion. The schools for Woodside residential precinct have been constructed and in use for some time, while the design and drawings for Auchmuty Secondary School, which will accommodate 950 pupils, are well advanced.

During the year 410 houses were completed, compared with 270 last year, and 523 were under construction at March 31. A group of specially designed two-apartment cottages to commemorate the Coronation and for letting to aged, disabled and retired miners was opened in June, and the first blocks of three-storey flats in Woodside have been completed and occupied; in Auchmuty some of the four-storey "Y" shape blocks of flats are beginning to take shape.

"In general," the report states, "the provision of roads and sewers for housing and other development has fallen behind the programme." This is due to delay in approval of certain schemes and shortages of labour. Total labour force engaged on all new town projects was 404 at March 31, compared with 584 a year ago. The decline in men employed in engineering is due mainly to the delay in a start being made to new site servicing works.

The report states: "One main channel of development remains untouched, despite the efforts of the Development Corporation, namely, the settlement within Glenrothes of industries in social and economic balance with the major provision of employment at Rothes Colliery.

"The Development Corporation feels that, as long as this phase of planning is not marked with the lines of industry in being, many of the people of Glenrothes, gathered together in a new industrial community, may lack the happiness of social contentment and security."

The audited accounts included in the report show that the net capital expenditure for the year was: East Kilbride £2,752,261; Glenrothes £869,750.

NEW BUILDINGS

Aberdeen.—Corpn. has approved of two schemes by the EC, being a new community centre at the Mastrick housing site, estimated at £17,500, and additional classrooms, etc., at the Grammar Sch. at an estimated cost of £34,500. The architect is Alexander B. Gardner (F), Council Architectural Offices, Broad-st., The Castlegate, Aberdeen.

Dumbartonshire.—Plans prepared and approved for 75 houses for single persons to be erected at a Drumchapel site. The architect is Archibald G. Jury (F), Housing Offices, The Trongate Glasgow.

Edinburgh.—Dean of Guild Court approved proposals by Church of Scotland to build church and halls at Groathill-rd. North, Davidson's Mains. Estimated cost of scheme, £20,000.

Edinburgh.—Dean of Guild Court have approved proposals by Laidlow, Drew & Co., Ltd., 9, Tower-st., Leith, to erect a factory at Sighthill Industrial Estate. Estimated cost of scheme, £67,000.

Edinburgh.—Dean of Guild Court has granted permission to Ford & Torrie, Ltd., Hanover-st., to erect 16 semi-detached houses at Southfield Farm Grove, Liberton. Estimated cost of scheme, £30,800.

Fifeshire.—Corpn. of Burntisland has approved the erection at South Broomhouse-cres. of over 50 houses. The Council A is Albert C. Watson, MInstCE, Master of Works Offices, Burntisland.

Glasgow.—Plans prepared and approved for alterations and additions for P. W. Hall, Ltd., Port Dundas, to be carried out at 28-32, Kyle-st., Dobbies Loan, Townhead, for which the architect is Archibald D. Hyslop, United Kingdom Provident Institution-blds., St. Vincent-st., Glasgow, WC2.

Glasgow.—Plans prepared and approved for new offices and garages at Aitkenhead-rd. The architect is W. S. Abell, 24, Kingsburn-rd., Rutherglen.

Glasgow.—Plans prepared and approved for alterations and additions at the Dalmarnock Iron Works. The engineers are Sir William Arrol & Co., Ltd., 95, Dunn-st., Bridgeton, Glasgow.

Inverness-shire.—CC has plans in hand for a sec. sch. to be erected at a selected site at Fort William. The architect is Alexander Cullen (F), County Architectural Offices, The Castle, Inverness.

SCOTTISH BUILDING TRADE WAGES

FOLLOWING are rates of wages authorised by the Scottish National Joint Council as from May 24, 1954. They apply to the whole of Scotland, including the islands of Orkney, Shetland, etc.

Grade A: Craftsmen, 3s. 9d.; Labourers, 3s. 3½d.

For apprentices, the rates are:

Year.	*Percentage of Craftsman's rate.*	*For week of 44 hours.*
		s. d.
1st	25	41 3
2nd	33⅓	55 0
3rd	50	82 6
4th	66⅔	110 0
5th	75	123 9

For female labour, the rates are:

	s.	d.
Operatives on craft operations (at end of probationary period)	3	3½
Operatives on labouring operations (at end of probationary period)	3	0

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Full details of Public Appointments open will be found in the Advertisement pages of this and previous issues.

CONTRACTS OPEN

For some contracts still open but not included in this list see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

BUILDING

AUGUST 27.

***†Coventry Corpn.**—Restaurant for 200 persons in Broadgate House. City A. Tenders by September 14. Dep. £2 2s.

AUGUST 28.

***†Leeds Reg. Hosp. Board.**—Two-storey villa, Westwood Hospital, Bradford. A to the Board, Park Parade, Harrogate. Dep. £2 2s. Tenders by October 6.

***†Malden and Coombe BC.**—Two pair of semi-detached houses, 174-176, Elm-rd. BE.

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AUGUST 30.

Sale TC.—Contract E, 44 houses; contract F, 22 houses at Gratrix-la., No. 1. BE. Dep. £2 2s. each contract.

AUGUST 31.

†**Bridgnorth RDC.**—(a) Six houses at Eudon George; (b) 60 at Highley. G. C. Harris, Clerk to C. Dep. £2 2s. each scheme.

SEPTEMBER 1.

Cleethorpes BC.—Erection of Beacon Hill housing scheme No. 6. A. B. Cooper, Boro' E. Dep. £2 2s.

West Penwith RDC.—12 houses at Sennen housing site (near Land's End). F. Hartley, architect, 38, Chapel-st., Penzance.

SEPTEMBER 3.

***†Malden and Coombe BC.**—Library, Church-rd., Worcester Park. BE.

SEPTEMBER 4.

Bridgend UDC.—79 houses and flats on Brackla housing site, contract 4 comprising 51 dwellings, contract 5, 28 dwellings. E&S. Dep. £3 3s.

***Market Drayton UDC.**—Five bungalows, Salisbury-rd. S. Dep. £1 1s.

SEPTEMBER 6.

***Southampton CBC.**—34 dwellings, Grange Farm estate. BE. Dep. £2.

South Shields TC.—104 houses at Whiteleas estate. Building works to commence January 1, 1955. BE. Dep. £2 2s.

South Shields TC.—20 bungalows and 10 special houses at Marsden-rd. BE. Dep. £2 2s.

SEPTEMBER 8.

***Basingstoke BC.**—26 dwellings and 13 garages at Kipling-walk, Hillview-rd., and Winchester-rd., South Ham. Boro' A. Dep. £2 2s.

***Esher UDC.**—16 old persons' bungalows and 8 houses on two contracts, on Tartar Hill (Canada-rd.) estate, Cobham. E&S. Dep. £1 1s.

***Rugby Boro'.**—Sport pavilion and clubhouse, Mill-rd. BS. Dep. £2 2s.

SEPTEMBER 10.

Chertsey UDC.—Erection of 52 garages at Addlestone, New Haw and Chertsey. E&S. Dep. £1 1s.

SEPTEMBER 13.

***Chester RDC.**—10 garages, Great Sanghall. T. C. R. Eaton (A), 16, White Friars. Dep. £3 3s.

***Croydon CBC.**—Repairing war damaged Park Hill water tower. BE.

***Croydon CBC.**—Rebuilding dressing pavilion, Duppas Hill recreation ground. BE.

Dartford BC.—Erection of 60 dwellings and eight garages at Temple Hill Neighbourhood Unit (scheme No. 5). Thomas Armstrong, C, Town Hall. Dep. £2 2s.

***Lowestoft BC.**—Extensions to Roman Hill secondary boys' school. BE. Dep. £2 2s.

SEPTEMBER 14.

***Wellingboro' UDC.**—64 houses on Croyland Hall Farm estate.

SEPTEMBER 15.

***Chadderton UDC.**—Public wash-house adjacent to Middleton-rd. swimming baths. E&S. Dep. £2 2s.

***Lindsey CC.**—Two-form secondary modern school at Redcombe-rd., Brigg. County A, Lincoln.

SEPTEMBER 16.

***Aldridge U.D.C.**—10 aged persons' bungalows at Stoke-st., Rushall. C. E. Andreasen, AMICE, "The Poplars," Leighswood-rd. Dep. £2 2s.

SEPTEMBER 21.

***Crewe BC.**—Garage on site adjacent to refuse disposal works, Pym's-la. BE&S. Dep. £2 2s.

SEPTEMBER 25.

***Totnes RC.**—17 houses and 13 bungalows, Farwell estate. BE. Dep. £2 2s.

SEPTEMBER 29.

***Calne and Chippenham RDC.**—Eight houses, four bungalows and site works at Corsham-rd., Lacock. Edwards & Webster, architects, 10, St. Mary-st., Chippenham. Dep. £2 2s.

OCTOBER 11.

***Rochdale CBC.**—90 dwellings and 16 garages on Falinge Hill estate. BS.

NO DATE.

†**Scottish Spec. Hsg. Assoc., Ltd.**—28 houses at Lintwhite site, Bridge of Weir, Renfrewshire. Scottish Special Housing Assoc., Ltd., 15-21, Palmerston-pl., Edinburgh, 12.

PAINTING, ELECTRIC LIGHTING, MATERIALS, ETC.

AUGUST 27.

***†Halifax CBC.**—Various items for 118 " Trusteel " houses at Mixenden. BE.

SEPTEMBER 2.

***Newcastle Regional Hospital Board.**—Fixed laboratory benching and furniture, Pathological Institute and Regional Blood Transfusion Centre, Newcastle General Hospital. Secretary, " Dunira," Osborne-rd., Newcastle-upon-Tyne, 2.

SEPTEMBER 4.

Stamford BC.—Electrical installation and wiring in pre-war council houses. E&S. Dep. £2 2s.

SEPTEMBER 11.

***Prestwich Hosp. Management Com.**—External painting, South Drive nurses' home, Prestwich Hospital. Secretary, Prestwich Hospital, PO Box No. 1, Prestwich, near Manchester.

ROADS, SEWERAGE AND WATER WORKS

AUGUST 30.

Barnsley CBC.—Road surfacing works at Athersley North housing estate: (1) 40,000 sq. yd. bitumen macadam; (2) 40,000 sq. yd. fine cold asphalt. BE.

Epping RDC.—Sheering sewerage scheme, contract No. 2, about 900 lin. yd. piping, tank, pumping station, etc. E&S. Dep. £2 2s.

***†Stroud (Glos.) RDC.**—Roads at Blue Boys site, Minchinhampton. G. Gadsden, Clerk, Council Offices. Dep. £2 2s.

Tottenham BC.—Resurfacing of Green-lanes. Boro' E., Town Hall. Dep. £2.

Winchester TC.—Roads and sewers, Winnall Manor housing estate. City E, Guildhall. Dep. £2 2s.

Wrexham BC.—Roads and sewers, Queen's Park housing estate—section 7. E&S, 31, Chester-st., Wrexham. Dep. £2 2s.

AUGUST 31.

Spalding UDC.—About 410 yd. sewers and 1,620 yd. pumping mains. L. A. Gornall, S to Council, Short-st. Dep. £2 2s.

SEPTEMBER 1.

Kettering RDC.—About 1,500 yd. main sewers, disposal works, etc., at Rockingham. Pick, Everard, Keay & Gimson, engineers, 6, Millstone-la., Leicester. Dep. £2 2s.

SEPTEMBER 3.

Esher UDC.—Resurfacing of carriageways. E&S, Council Offices, Esher. Dep. £1 1s.

SEPTEMBER 4.

Calne and Chippenham RDC.—Rudloe and Widdenham water supply. Council's E, Bewley House, Marshfield-rd., Chippenham, Wilts. Dep. £2 2s.

SEPTEMBER 7.

Castle Donington RDC.—Park-la. sewer extension. Elliott & Brown, engineers. Stanley House, Pelham-rd., Nottingham. Dep. £5 5s.

SEPTEMBER 8.

Nant Conway RDC.—Chapel Curig water supply. J. Howell Jones, C. Nant Conway RDC, Plas Iolyn, Station-rd., Llanrwst. Dep. £5 5s.

SEPTEMBER 16.

Erpingham RDC.—125,000 gall. r.c. water tower at Mundesley. J. C. Melliss & Co., engineers, 110, Horseferry-rd., Westminster, SW1. Dep. £2 2s.

SEPTEMBER 18.

Ware UDC.—About 4,600 yd. super carriageways; 1,500 yd. lin. concrete kerbs; 1,500 yd. lin. sewers; and 760 lin. yds. water mains. E&S. Dep. £3 3s.

GENERAL BUILDING WORK

(LONDON)

Ashford.—SCHOOL EXTENSIONS.—Kent CC are recommended to approve proposals for the erection of two classrooms at Beaver Green County primary school, estimated to cost £7,500, and also the provision of additional accommodation for the Technical Institute by the adaptation of the former primary school premises at Beaver-rd.

Camberwell.—SCHOOL EXTENSIONS.—LCC Ed. Com. have approved a scheme for the provision of four additional classrooms with cloakrooms and sanitary accommodation at Bessemer Grange county primary school, planned in pairs as self-contained units. The estimated cost of the work is £13,232, and LCC Ed. Com. recommend that Vic Hallam, Ltd., be nominated as sub-contractors to the main contractors for the supply, delivery and erection of Derwent components for the scheme.

Chatham.—ADDITIONAL CLASSROOMS.—MH and LG have approved a scheme proposed by Kent CC for the erection of three additional classrooms at Walderslade Infants' School at an estimated cost of £12,500.

City.—OFFICE BUILDING.—A scheme is being prepared by Messrs. Joseph, architects 10, Lowndes-sq., SW1, for A. L. Dollond & Co., solicitors, 121, London Wall, EC2, providing for the erection of a multi-storey block of offices to be known as Lloyd's Chambers on a site at the corner of Crutched Friars and Crosswall, facing Lloyds-ave. The building will be 80,000 sq. ft. in size and will have nine floors including the basement. The total cost of construction is estimated at £500,000. Each floor will consist of about 50 separate rooms, and the structure will be clad in Portland stone and specially processed glass.

Dartford.—COLLEGE OF TECHNOLOGY.—Proposals have been made for the addition of a large workshop block to the main building of the new North-West Kent College of Technology. The total estimated cost of the scheme for the entire college is £355,000.

Elstree.—GARAGES.—RDC are recommended to approve the preparation of plans for the erection of 17 garages on a site at Oakwood estate, Boreham Wood.

Elstree.—CONVENIENCE.—Plans submitted by Shenley PC for the erection of a public convenience at Harrisla. Recreation Ground have been approved by RDC.

Euston.—HEAD OFFICES.—Plans are being prepared by Moiret & Wood, ARIBA, 181, Queen Victoria-st., EC4, providing for the erection of a new four-storey office building on a site in Euston-rd., near Euston Station. The building, which has an estimated cost of £120,000, will be used as the head offices of the National Union of Mineworkers, at present at 5, Westminster Bridge-rd., SE1.

Hemel Hempstead.—MARKET AND SQUARE.—Layout plans have been approved by TC providing for the erection of a market and square at Marlowes at an estimated cost of £8,062.

Heston.—HOUSES.—BC are to proceed with the scheme for 201 new houses to be built on a 40-acre site at Cranford-la. The scheme will have a total estimated cost of more than £250,000.

Lambeth.—SITE CLEARANCE.—A clearance scheme estimated to cost £71,000 is to be carried out in the Southville areas of Lambeth and Wandsworth. The total area of the site to be cleared is 4½ acres.

LCC—SESSIONS HOUSE.—The Home Office have awarded a provisional starting date of September for building work to commence on the proposed Sessions House in Newington Causeway. Working plans for the scheme have been prepared by LCC architects' department; and the estimated cost is £480,000.

Orpington.—COUNTY OFFICES.—Kent CC are recommended to approve a scheme for the erection of new divisional county offices at Knoll-rise. The estimated cost of the scheme is £12,600.

Paddington.—FLATS.—Site clearance has commenced on the 2½ acre Barrie-st. area. Proposals have been made by the LCC for the erection of three blocks of flats providing a total of 130 flats for the higher income group, as well as 30 garages and two shops, at an estimated cost of £498,410. Two of the blocks will be seven-storey, and the third will be partly seven-storey and partly eleven-storey.

Rochester.—SCHOOL ADDITIONS.—Proposals for the provision of additional accommodation at Sir Joseph Williamson's Mathematical School are recommended for CC's approval.

Sevenoaks.—OLD PEOPLE'S HOME.—Kent CC are recommended to approve a scheme for improving accommodation at Kippington House, Home for Old People. The total estimated cost of the scheme is £13,665.

Southwark.—BRIDGE REBUILDING.—Work is to begin soon on repairing the northern approach to Southwark Bridge. The cost will be about £75,000.

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(PROVINCIAL)

Accrington.—Accrington Stanley Football Club propose new stand on Burnley-rd. site of Peel Park, £30,000 est. Work to commence as soon as possible. Further stand proposed on Peel Park side of ground.

Birkenhead.—BC to invite fresh tenders for the erection of 135 houses and 42 flats at Overchurch estate.—Plans submitted to BC: 741 dwellings and 10 shops at Woodchurch-rd., Holm-la. and Flat-la., for Boultons (Bebington), Ltd., School-la., Bebington. Plans by Richard Davies, Son & Escolme, 167, Old Chester-rd.; extensions to bakery at 754, Borough-rd., for David Ross, Ltd.; 54 houses at Greasby-rd., for Superstructures (Southern), Ltd., 23, Baker-st., Liverpool. Plans submitted by Joseph Rimmer & Son, 48, Castle-st., Liverpool 2.

Chester-le-Street.—UDC received approval for layout and est. cost £72,047, for 50 houses. Plans by S.

Darlington.—EC has forwarded sketch plans for proposed Haughton sec. mod. and tech. sch. to MoE.—R. W. Gregory & Partners, Pilgrim House, Newcastle-on-Tyne, appointed heating consultants for new College of FE.—TC to appropriate 42 acres of land at High Firth Moor estate for housing purposes.

Hexham.—Northumberland CC to spend £56,000 on erection of police stn. at Hexham. Contracts undecided. Cty. A, C. C. Brown, County Hall, Newcastle-on-Tyne.

Hull.—New security prison to be built at Everthorpe Hall. Total cost of conversion, excluding houses for prison officers and families, about £850,000. Work expected to take from three to four years.

Jarrow-on-Tyne.—Scheme for extending Jarrow oil installation of Shell-Mex and BP, Ltd., WC2, will go out to tender shortly. Firm prepared own plans.

Lanchester (Durham).—RDC to build 28 houses and 12 bungalows at Esh Winning.

Leeds.—Work expected to start soon on four-storey office block at Eastgate for Shell-Mex and BP, Ltd. Extensive garage will be provided. Provision to be made for traffic subway. The new offices will replace present Shell-Mex divisional HQ at Queen-st., Leeds. The builders are Tersons, Ltd., London. Architects and surveyors are Cotton, Ballard & Blow, of Birmingham, London and Newcastle-on-Tyne.

Leeds.—TC appointed L. C. Wakeman & Partners, 47, Bloomsbury-sq., London, WC1, as quantity surveyors for Saxton Gardens Housing Scheme.—To invite tenders for erection of block of single women's flats and six garages at Moorfield House estate.

Leeds.—Brotherton & Co., Ltd., City Chambers, Infirmary-st., propose new offices in Westgate area. Architect, Victor Bain, 3, Queen's-sq., Leeds 2.

Manchester.—Mak Construction Co., Ltd., propose erection of eight houses at Raveley-ave., Fallowfield. Architect, Aubrey A. G. Toone, 37, Princess-st., Manchester.—Institute of Blessed Virgin Mary propose extensions to College at Upper Moss-la., Hulme, including three-storey classroom block, single-storey assembly hall and cloakrooms. Architects, Reynolds & Scott, 9, Albert-sq., Manchester.

Middlesbrough.—Tees Conservancy Com. have appointed Sir William Halcrow & Partners, London, as consulting engineers for their scheme to construct new docks, cost £1,900,000. Sanction for scheme received.

Newcastle-on-Tyne. — Reg. Hospital Brd., " Dunira," Osborne-rd., to start work next January on conversion of Walkergate Hospital into eye hospital. Work will take 12 months. Board's Chief A, P. H. Knighton, MBE, ARIBA.

Newcastle-on-Tyne.—City C received loan sanction for £297,447 for erection of 202 " Unity " houses at Fawdon; £377,447 for 215 " No Fines " houses at Fawdon; and £17,333 for 12 flats in Tarset-st. P. Parr, City E.

Newcastle-under-Lyme.—Ashley Memorial Hall Com. to invite tenders for Stage 1 of new memorial hall. Architects, Watkin & Willis, Bank-chbrs., Burslem, Stoke-on-Trent.

Northumberland.—CC approved in principle proposed additions to workshops, etc., at Benton, to cost £79,000. Scheme still in preliminary stages.—J. W. Summers & Partners, 33, Jesmond-rd., Newcastle, appointed quantity surveyors by CC for proposed Bedlington inf. sch.—CC approved amended sketch plans for old people's home at Wallsend, to cost £28,500. MH has authorised purchase of site at Cowpen-rd., Blyth for similar home.

Salford.—North-Western Elec. Brd. propose large-scale developments at Agecroft Power Stn., £10m. est. Work to commence in September.

Salop.—CC propose appointing private architect to carry out sch. building schemes valued at £400,000 est.

Seaham.—UDC to build civic centre and new dwellings to house 750 people.

Sedgefield.—RDC will consider tenders shortly for erection of six shops and flats at West Cornforth and 10 shops and flats at Trimdon Village. Plans by Hsg. A.

Shipley.—UDC approved preliminary scheme for erection of flats at Dale-st. and Union-st.

Solihull.—Warwickshire CC prepared preliminary plans for extensions to fire stn., £16,000 est.

Staffs.—CC to prepare preliminary plans for following:—Extensions Brewood gram. sch.; additional classrooms at Lichfield Curborough-rd. cty. prim. sch.; laboratory at Dudley Training Col.; additional classrooms at Endon cty. sec. mod. sch.; laboratories at Lichfield cty. sec. gram. sch.

Startforth.—RDC, Barnard Castle, to acquire land at Bowes as site for three pairs of semi-detached houses. Plans by S.

Stockport.—TC approved plans for branch library at Brinnington. Architects, W. Dobson Chapman & Partners, Pear Tree House, Jordangate, Macclesfield.

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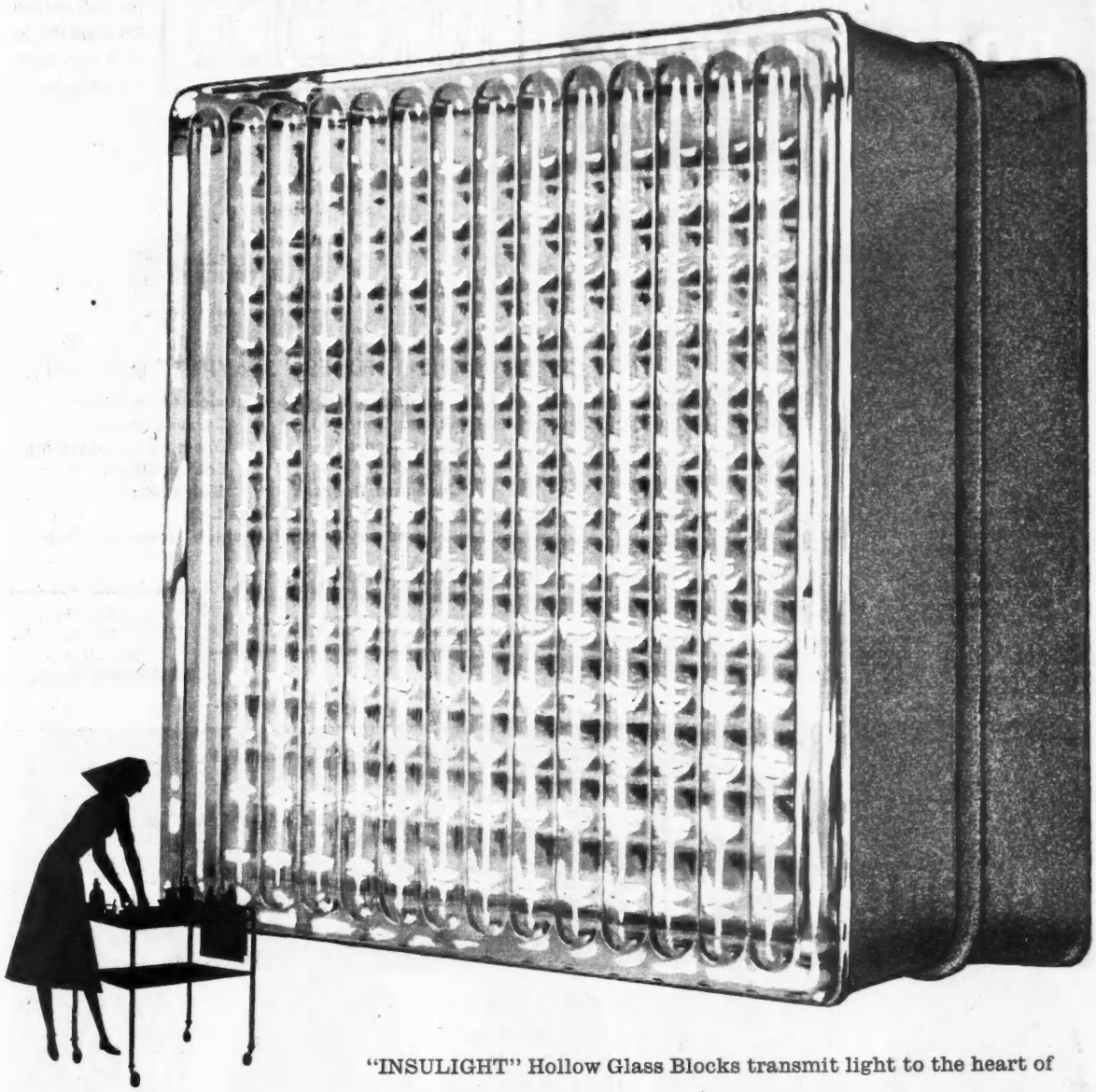

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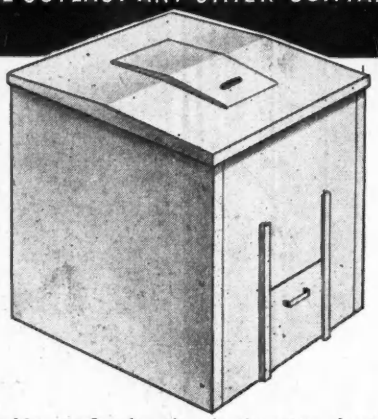

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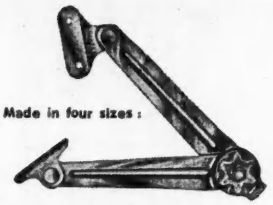

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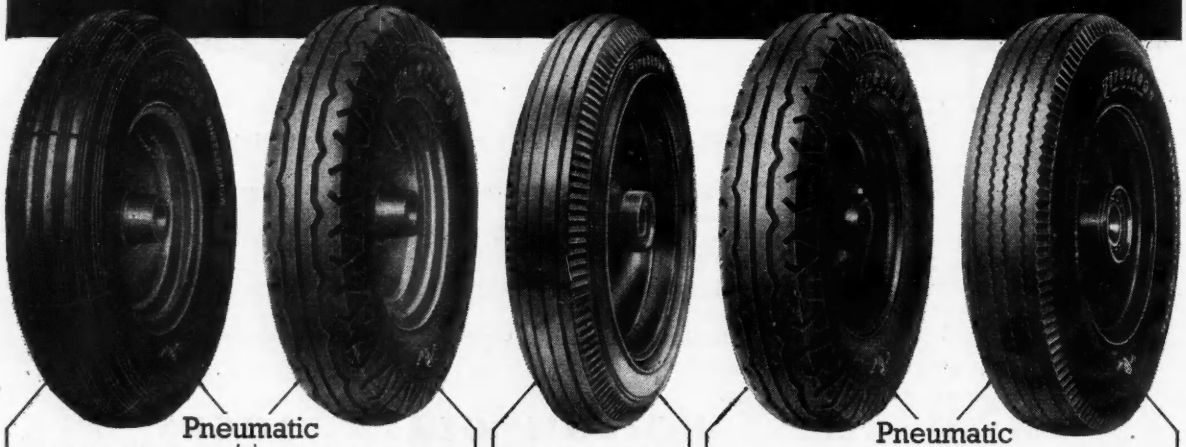

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Stone.—RDC to invite tenders for erection of 50 houses at Blythe Bridge.

Sunderland.—Work to begin this year on rebuilding of Methodist Church Hall at Roker.

Upholland.—UDC approved plans for erection of Methodist Church at Tower Hill.

Wellingborough.—Northampton Trustee Savings Bank propose new bank premises.

West Hartlepool.—Quantities to be prepared and tenders invited by EC for erection of proposed Brierton cty. sec. sch. Plans by Boro' A, Municipal-bldgs., West Hartlepool. Cairns & Byles, 8, Osborne-rd., Newcastle-on-Tyne, heating and electrical consultants.

West Hartlepool.—TC to negotiate price with Hartlepool's Master Builders' Assoc. for erection of 146 houses on Owton Manor Estate.—TC proposes 54 houses in two-storey construction and eight old people's bungalows at Owton Manor.

Whitby.—UDC has been offered grant of 75 per cent. by Treasury towards rebuilding of fish quay, subject to cost not exceeding £56,250. Consulting E, Lewis & Duvivier, Grosvenor-gdns., SW1.

TENDERS

* Denotes *accepted*.
† Denotes *provisionally accepted*.
‡ Denotes *recommended for acceptance*.
§ Denotes *subject to modification*.
¶ Denotes accepted by H.M. Government Departments.

Albert Embankment.—Erection of one 10-storey block of offices on Albert Embankment, SE11, for National Dock Labour Brd. Architect, Frederick Gibberd, CBE, FRIBA, MTPI, Consulting Engineer, Felix J. Samuely, BSc, MICE, MIStructE: *Wates, Ltd., London-rd., Norbury, £162,638.

Antrim.—Erection of intermediate sch. at Larne, for EC: *William Logan & Sons, Belfast, £224,466.

Ashford.—Erection of 20 flats with roads and drainage at Elmcroft-dr., Church-rd., Ashford, Middx., for A. P. Watts. Architects, Dahl & Cadman, F/ARIBA, 3, Bouverie-rd. West, Folkestone:—

Purser & Co. (Hillingdon), Ltd.	£40,486
Tersons, Ltd.	38,964
Bunting Construction Co., Ltd.	37,612
Wallage Bros., Ltd.	36,925
A. T. Rowley (London), Ltd.	36,476
Sloggetts (Contractors), Ltd.	36,459
W. S. Try, Ltd.	36,372
G. T. Crouch, Ltd.	35,914
Rowley Brothers, Ltd.	35,280
Percy Bilton, Ltd.	34,465
W. H. Streeter, Ltd.	33,357
*Geo. Young (Floriston), Ltd.	33,148

Bradford.—Erection of 66 houses at the Moorside-rd. extension, Eccleshill South estate, for TC: *H. Harrison & Co. (Leeds), Ltd., Post Hill Quarries, Farnley, Leeds, £93,318.

Campbeltown.—Erection of coastguard stn. and dwelling house: *Robert Weir & Sons, Ltd., Longrow contracting Works, Campbeltown.

Camberwell.—Erection of 130 flats together with laundry, stores, etc., at Pelican Yard, Peckham, for BC. E&S, J. Clapp, BSc., AMICE: *Wates, Ltd., London-rd., Norbury, SW16, £332,751.

Carlisle.—Erection of houses for City Council. City E, L. J. A. Stowe, 18, Fisher-st., Carlisle: *J. Laing & Sons, Dalston-rd., Carlisle (10 houses at Harraby); *H. Cartner & Son, Newby Green, Dalston (nine bungalows).

Chesterfield.—54 houses at the Pevensey estate, for BC: *Direct Labour, £68,301 (in lieu of previous tender).

Coatbridge.—100 houses to be erected at Summerlee Housing district, for Corp. Mr. James Monteith, MInstCE, Council A, Municipal-bldgs., Coatbridge. Excavation, brick, building and allied works: *William Purdon & Co., Ltd., Turner-st., £64,630; Plumbing, sanitary engineering and allied works: *James Bryce & Sons, Ltd., 50, Roxburgh-st., Greenock, £18,244.

Consett.—Shops at Cutlers Hall, Blackhill, for UDC. Ethringham & Lowes architects, Derwent-st. Quantities by J. G. Hellawell. *C.T.C. (Builders), Ltd., Queens-rd., Blackhill, Co. Durham.

Coventry.—Erection of Baptist Church at Tile Hill, Coventry: *A. Matt & Son, Ltd., Vecqueray-st., Coventry. Erection of first instalment of Whitley Abbey sec. sch., for EC: *Gilbert Ash, Ltd., 2, Stanhope-gate, W1. £74,777.

Craghead (Co. Durham).—Factory additions for Webwear, Ltd. Architect, J. H. Napper, 56, Eldon-pl., Newcastle-on-Tyne: *David Glen, Ltd., Albert-rd., Jarrow.

Darfield.—20 traditional houses at Tempest-ave. site, for UDC: *Dearne Construction Co., Ltd., 46, Printing Office-st., Doncaster.

Darlington.—Erection of 34 houses on Firth Moor estate, for TC. Boro' A, E. A. Tornbohm: *Direct Labour, £44,650.

Dumbarton.—Erection of 52 houses at the Cardross-rd. South housing site, for Corp. Mr. William Wilson, Council A, Master of Works Offices, Municipal-bldgs., Dumbarton: *Robert D. Robertson, Ltd. 34, Cardoness-st., Dumfries.

Galway.—Erection of 253 houses and 12 shopping centres at Melvue, for Corp.: *Brennan Bros., Naas, Co. Kildare, £397,650.

Glasgow.—Erection of refuse destruction building at Polmadie, for Corp. Merz & MacLellan are the consultant engineers: *Hennan & Froud, Ltd., Worcester, £1,105,634.

Glasgow.—Erection of warehouse and garage, etc., for Thomas Robertson & Sons & Co., Ltd., of Ingram-st. Architects are Elsworth, Sykes & Partners, F/FRIBA, Ruskin-chbrs., Scall-la., Hull, Lincolnshire: *William Gibson & Co. (Builders), Ltd., St. James-st. Contracting Works, Paisley, Renfrewshire.

Greenock.—Extensions, additions and alterations, etc., which will be carried out at an estimated cost of between £300,000 and £400,000, for John Walker & Co., Ltd., Sugar Refiners (Tate & Lyle, Ltd.), at the Princess-Nicholson-st. Sugar Refining Buildings. George Davies, Crawford & Partners, architects and consulting engineers, 26, Woodside-pl., Woodlands-rd., Glasgow, WC2: *Hugh Leggatt (Building Contractors), Ltd., Gladstone-pl., Barrhead, Renfrewshire.

Haltwhistle.—Erection of child welfare centre, for Northumberland CC. Cty A, C. C. Brown, County Hall, Newcastle-on-Tyne: *J. Birkett, Crossfield-ter., Haltwhistle, £12,255.

Heald Green (Cheshire).—Erection of Church of St. Catherine, Outward-rd.: *Benjamin Smith, 60, Chapman-st., Manchester 15.

Hyde.—New offices at Godley Mills, Bottom-st., for James North & Sons, Ltd.: *Vessey, Ltd., Marple.

Keighley.—90 houses at Braithwaite estate, for TC: *F. Shepherd & Sons, Ltd., York, £115,544.

Keighley.—Extensions to large garage premises, Hanover-st., for Walter Burgess, Ltd.: *Herbert Clark & Sons, Whitley-st., Bingley.

Lanarkshire.—Erection of church and halls at Murray housing site, and three housing schemes for Development Corp. of East Kilbride. Mr. Frank Scott, LRIBA, Development A, Terrence House, East Kilbride. Church, etc.: *Robert Brown & Son, Ltd., Blantyre Contracting Works, High Blantyre; 116 houses at Mains housing site (Unit 5): *Holland & Hannen and Cubitts (Scotland), Ltd., 112, St. Vincent-st., Glasgow, WC2; six houses at Whiteness housing site: *Alexander Wright & Son, High Blantyre; 116 houses at Westwood housing site (Unit 2): *George Wilson & Co. (Stonehouse), Ltd., Lockpark Green Contracting Works, Stonehouse.

Lanarkshire.—Additions and alterations at the farm Cawdercuilt: *Keir & Cawder Estates, Ltd., Bishopbriggs, Lanarkshire.

Leamington Spa.—107 dwellings at Lillington estate, for BC: *Geo. Wimpey & Co., Ltd., London.

Lindsey.—Fire and ambulance station, Gainsborough, for CC. County A, Lincoln. *Bernard Pumfrey, Ltd., Gainsborough, £28,334.

Lindsey.—First instalment of secondary modern school, Humberstone-rd., Cleethorpes, for CC. County A, Lincoln. *Taylor and Coulbeck, Ltd., Cleethorpes, £112.059.

Lindsey.—First instalment of secondary modern school, High Holme-rd., Louth, for CC. County A, Lincoln. *Ellis Thompson and Co., Ltd., Louth, £98,875.

Liverpool.—Following for EC: Erection of Hillfoot Hey Boys' gram. sch., Woolton, and New Heys Heath-rd. girls' sch.: *J. Jones & Sons (Woolton), Ltd., Hale-rd., Ditton, Widnes. £169.000 and £159,000 (approx.).

¶**London (Admiralty).**—Civil Engineer-in-Chief's Dept., Admiralty, have issued the following particulars of contracts:

Somerset: painting work, T. H. Kenyon & Sons, Ltd., Chancellor's Works, Croxley-rd., W9; *Norfolk*: civil engineering work, May, Gurney & Co., Ltd., Trouse, Norwich; *Kent*: crane track, Sir R. McAlpine & Sons, Ltd., 80, Park-la., W1; *Hants*: building work, Southern Counties Construction Co., Ltd., Waterlooville, Portsmouth: automatic sprinkler & fire alarm system, Mather & Platt, Ltd., Park House, 22/26, Gt. Smith-st., SW1.

¶**London (Admiralty).**—Particulars of contracts placed by Civil Engineer-in-Chief's Dept., Admiralty:—

Devon: Building works, Wakeham Bros., Ltd., Knighton-rd., Plymouth, and the Town & Country (Plymouth) Building Co., Ltd., Tregelly, Antony, Torpoint, Cornwall. *Kent*: Painting work T. H. Kenyon & Sons, Ltd., Chancellor's Works, Croxley-rd., W9; Resurfacing roads and pathways, Val-de-Travers Asphalte Paving Co., Ltd., 21/22, Old-Bailey, EC4. *Hants*: Building works, R. Corben & Sons, Ltd., 26, Carlton-cres., Southampton; Structural steelwork, Rubery Owen & Co., Ltd., 102/108, Clerkenwell-rd., EC1; Painting work, Baxter Bros. (1920), Ltd., Newcastle-on-Tyne. *Dorset*: Civil engineering work, A. E. Farr, Ltd., Station-rd., Westbury, Wilts. *Northumberland*: Boring, Soils Mechanics, Ltd., 65a, Old Church-st., SW3.

¶**London (Air Ministry).**—The following new works contracts to the value of £500 or over have been placed by the Directorate of Contracts for the week ended August 14:

Building work, Stanley Stone, Chelsea, Ltd., Market-st., Highbridge, Somerset; painting work, Ian Williams & Co., 59, Queen-st., Cardiff; surface dressing work, S. Sutcliffe & Son, Ltd., Cragg-rd., Mytholmroyd, Yorkshire; general maintenance work, Pochin (Contractors), Ltd., King-st. Works, Middlewich, Cheshire; erection of storage tanks, Palmers Hebburn & Co., Ltd., Hebburn-on-Tyne, Co. Durham.

London (LCC).—The undermentioned contracts exceeding £2,500 in value have been placed by LCC during the period ended August 6:—

Construction of Block No. 1 of flats at Oliver Goldsmith estate extension (Peckham High-st. Site), Camberwell, A. T. Rowley (London), Ltd. (£66,381). Construction of foundations to Blocks 5 and 6 at Friary Estate, Camberwell, The Pressure Piling Co. (Patent), Ltd. (£13,573). Laying out of gardens to Blocks 1-7 at Watermead Estate, Lewisham, A. Stevens, Senior, Woodford Wells (£3,887). Construction of Blocks 1-7 of flats at Eliot Vale site, Lewisham, M. J. Gleeson (Contractors), Ltd., £174,053. Installation of Ascot 709 gas water heaters at Springfield Estate, Wandsworth, J. B. Jackson and Partners, Ltd. (£5,691). Installation of Ascot 709 gas water heaters at Sumner Estate, Camberwell, J. B. Jackson and Partners, Ltd., (£9,148). Installation of Ewart 210 gas water heaters at Cowley Estate, Brixton, Stitson White and Co., Ltd. (£5,280). Installation of Ascot 709 gas water heaters at Stamford Hill Estate, Stoke Newington, J. B. Jackson and Partners, Ltd. (£2,733). Installation of Ascot 709 gas water heaters at Downs Estate, Hackney, J. B. Jackson and Partners, Ltd. (£3,832). Painting and repairs at Brandon Estate, Southwark and Camberwell, Bell and Co. (Westminster), Ltd. (£3,955). Erection of chestnut fencing at Becontree Estate, Essex, Edward Tyrrell, Ltd., Sevenoaks (£3,665). Laying out of gardens at Tate Street site, Lambeth, Grassphalte, Ltd., Hampton (£3,406). Electrical installation at John Kennie primary school, Stepney, Carlin Engineering Co., Ltd. (£2,880). Provision of prefabricated dining hut at Estreham and Penwortham primary schools, Wandsworth, Cannon and Roaf, Ltd. (£7,473).

London Midland Region.—British Railways announce that the following contracts have been placed:—

Henry Hope & Sons, Ltd., Smethwick, Birmingham, for patent glazing for renewal of engine shed roof, Workington motive power depot; Samuel Butler & Co., Ltd., Albion Works, Stanningley, nr Leeds, for supply, delivery and erection of steelwork, stage 1, for reconstruction of roof, Carlisle Citadel stn.; S & C. Walmsley, Ltd., Stand Park Works, Bridle-rd., Liverpool 10, for supply and erection of steelwork for examination and repair shop at Crewe motive power depot; Joseph Westwood & Co., Ltd., Napier Yard, Millwall, E14, for supply and erection of steelwork for reconstruction and widening of Bridge No. 3 (Hythe-rd.) on Willesden No. 2 curve, for Hammersmith Corp.

¶**London (MOW).**—Contracts placed by MOW for week ending August 7:—

London: Neville and Little, Neville House, SW1, alterations and adaptations, Whyatt (Bldrs.), Ltd., Bentley House, 225, Streatham High-rd., SW16. *Cheshire*: PO eng. Dept., Cambria Works, Saltney, adaptations and alterations, John Perkins and Son, Ltd., White House, Whitley-rd., Ellesmere Port, Cheshire. *Northumberland*: MOW Ancicne Monuments Branch, The Chesters, Chollerford, construction of car park concrete bridge, etc., Fewsters (Stocksfield), Ltd., Stocksfield-on-Tyne, Co. Durham. *Essex*: Barnstaple BPO, Basildon New Town, internal finishes and fittings, J. and J. Dean Ltd., Ruckholt-rd., E10. *Kent*: Post Office TE, Orpington, internal decorations, F. Troy and Co., Ltd., 131, Gt. Suffolk-st., SE1. *Lancashire*: M/P and NI, Norcross, Blackpool, internal decorations, Wilfrid Coop, Ltd., Whitegate-dr., Blackpool. *Oxfordshire*: HPO, Banbury, extension to HPO, Hinkins and Frewin, Ltd., Middleton-rd., Banbury, Oxford. *Staffordshire*: MA and Fisheries ARC Cold Norton Farm, Stone, Staffs, adaptations to cowhouse, Horace Poole, Ltd., Newcastle-st., Stone, Staffs. *Yorkshire*: HPO North-st Ripon, alterations and adaptations, Walter G. Birch (Harrogate), Ltd., Montpellier House, Cold Bath-rd., Harrogate

¶**London (War Dept.).**—Works contracts placed by War Dept. for week ended August 7:—

Co. Down: Preservation of hutting, Irish Cold Bitumen, Ltd., Belfast. *Stirlingshire*: Painting and decorating, A. T. Rolland, Ltd., Dunfermline. *Nottinghamshire*: Building, G. G. Middleton & Sons, Ltd., Worksop. *Surrey*: Building, George Kemp, Stroud & Co., Ltd., Aldershot. *Essex*: Painting, T. H. Kenyon & Son, Ltd., W9; Painting and decorating, Arnold Sharrocks, Ltd., SW11. *Kent*: Miscellaneous, R. Webster (Folkestone), Ltd., Folkestone. *Warwickshire*: Painting, N. S. Long, Ltd., Shrewsbury. *Ayrshire*: Miscellaneous, Scottish Aviation, Ltd., Prestwick.

Marlborough and Ramsbury.—Erection of 12 houses at Avebury, for RDC: *Rendell & Sons, of Devizes, £23;430.

Newcastle-on-Tyne.—Work is in hand converting premises in Mosley-st. into premises for District Bank, Ltd. Architects, P. L. Browne, Son & Harding, Pearl-

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bldgs., Northumberland-st., Newcastle: *William Jackson, Audley-rd., Gosforth.

Northumberland.—Erection of police house and section stn. at South Broomhill, for CC: *R. Slawther, Alnmouth.

Peterlee (Co. Durham).—Erection of clothing factory for Alexandre, Ltd. (being built under the authority of North-Eastern Trading Estates, Ltd., Gateshead). Architect, J. H. Napper, 56, Eldon-pl., Newcastle-on-Tyne: *Bovis, Ltd., London.

Plymouth.—Erection of Imperial Fur House, New George-st. Architect, Edward Narracott, FRIBA, 48, Torwood-st., Torquay. QS, W. T. Hills & Co., 12, Princess-sq., Plymouth: *A. N. Coles (Contractors), Ltd., Sutton-rd., Plymouth.

Renfrewshire.—Erection of 12 houses for Barrhead Police. *MacTaggart & Mickel, Ltd., 151, West Regent-st., Glasgow, WC2.

Renfrewshire.—Erection of 42 dwellings at Johnstone's, Kilbarchan-rd. site. Architect, Mr. J. Austin Bent, ARIBA, 19, Palmerston-pl., Westend, Edinburgh: *Athol Houses, Ltd., Barfillan-dr., Paisley-rd., Glasgow, SW2.

Rotherham.—Extensions to factory at Fitzwilliam-rd., for Becker Electric Co., Ltd.: *Beeden, Ltd., Thrybergh, Yorks.

Rowley Regis.—Erection of an occupation centre at Regent-rd., for Staffs CC: *M. A. Boswell (Contractors), Ltd., School-st., Wolverhampton, £11,600.

St. Ives (Hunts).—Erection of eight houses and six garages at Hemingford Abbots, for RDC: *N. Meace & Son, Somersham, £13,896.

Salford.—14 flats, eight shops and eight maisonettes, Bury-st. site, for TC: *Unit Construction Co., Ltd., Brook-st., Knutsford, £53,548.

Saltburn.—Erection of six bungalows in Church-rd., Marske: *Morrison Bros., Railway-ter., Loftus.

Sedgefield.—Erection of 37 houses at Trimdon Colliery, for RDC. Plans by the Hsg. A, Council Offices, Sedgefield: *G. M. Pearson & Son, Hetton, Co. Durham.

Sheffield.—241 Simms "Bellrock" houses at Halifax-rd., for TC: *W. J. Simms, Son & Cooke, Ltd., Haydn-rd., Nottingham, £331,942.

Spennymoor.—Erection of 100 houses on Middlestone Moor Estate, for UDC. Architects, George H. Gray & Partners, Camden-st., North Shields: *Bell & Ridley, North-rd., Durham (49 houses); *Veti & Edwards, Eden-ter., Durham-rd., Sunderland (51 houses).

Tipton.—140 dwellings at Coneygree-rd., for BC: *Direct Labour.

Wakefield.—164 houses at Kettlethorpe Estate, for TC: *John Laing & Son, Ltd., London.

West Hartlepool.—Erection of 24 houses and eight bungalows in Claremont-dr.: *C. M. Yuill, Ltd., Villiers-st., West Hartlepool.

Wisbech.—Erection of two blocks of three-storey flats and maisonettes on Stafford-st., Contract No. 118, for TC. BE&S, S. Thompson, AMICE, MIMunE. Quantities by T. N. Rose, Peterborough: *W. & W. G. West, Alexandra-rd., Wisbech, £25,384.

Wolverhampton.—Further 87 garages at various estates, for TC: "W" Prefabricated Concrete Buildings, Ltd., £14,193. Erection of Warstones sec. mod. sch., for EC: *McKeand Smith & Co., Ltd., Showell-rd., Bushbury, Wolverhampton, £162,936.

Worcs.—Following for EC:—Erection of Gigmill cty. prim. jun. sch.: *W. Cooper & Son (Builders), Ltd., West-st., Blackheath, £49,545.

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